WHAT TO LOOK FOR IN A SURI

By Julie Wilkinson, Baarrooka Alpacas

Although a suri looks very different from the more common huacaya, the conformational traits to look out for are generally the same. The animal should be well proportioned, have straight legs and back, a rounded rump and correct bite. The key fleece characteristics desirable in both huacaya and suri are consistency of micron (absence of high micron primary fibres), lustre, fineness, density and staple alignment

Conformation

As outlined in the AAA Breed Standard:

well grown (doesn't affect the genetics but will increase fertility, reproduction, health);

straight back;

straight tail;

animal in proportion - back, legs, neck in proportion;

correct bite; and

size and conformity of testicles in male.

Fleece

The characteristics of the fleece are what distinguish the suri from huacaya alpacas. When assessing a suri, you should look for the following:

Handle;

Lustre;

Fineness;

Density;

Uniformity;

Length (staple growth for age);

Locking;

Colour; and

Coverage.

Handle: the suri fleece should have a soft, silky, buttery handle. The handle is what holds suri apart from other fibres and gives a finished article made from suri fibre a luxurious feel. The handle is a factor of fineness, lustre, uniformity of

micron and nourishment of the fleece and can only be felt, not measured. By putting your hands into many suri fleeces, you will begin to feel the difference. Remember that dust, wind and UV light can all damage the fibre and affect its handle. Make sure you feel inside the fleece, preferably on the clean fibre next to the skin. Or assess a sample of fleece washed in a very gentle shampoo. Any suri with fleece that feels dry and harsh should be avoided.

Lustre: lustre is the shine or glow inherent to the most exquisite fleeces—open up a fleece to assess the lustre next to the skin. Lustre is influenced by consistency of colour and micron of the fleece, as well as the structure of the fibre (i.e. the more round, rather than oval, the fibre is, the more it will reflect light). It can also be influenced by dirt and dust.

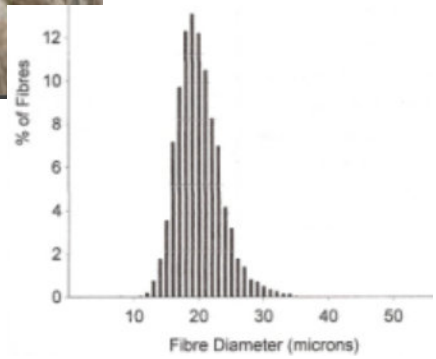
Although there are a lot of variables, including genetic influences, because white (and often black) animals are a consistent colour, they usually display greater lustre than coloured animals. Use a subjective score of 5 (no lustre) to 1 (extreme lustre) to assess animals against each other or against a control, like mulberry silk. The more animals you assess, the better you will get at making this subjective measurement. Remember though, that environmental impacts, such as nutrition, dust in the fleece and illness or stress can impact on lustre. Also, do not mistake the brightness of a clean white fleece for lustre. It is best to assess a washed sample to determine the real lustre of a fleece.

Fineness: the finer the fleece, the softer and generally more lustrous it is and the higher its price. As breeding improves, we are seeing more and more superfine, ultrafine and sheer ultra suri fleece. However, Australia produces relatively small amounts of suri fibre generally and in the very fine category specifically. Most Australian processors will not process fibre finer than 18 micron. In Peru, fibre of different classes are mixed together for processing. Some believe this gives Australia an opportunity to develop a world market in superfine suri, with European processors and buyers being a lucrative market.

Classes for suri and huacaya from the current AAA Alpaca Fleece Classing Code of Practice are:

Sheer Ultra	**<16.0**
Ultrafine	**16.1-18.5**
Superfine	**18.6-20.5**
Fine	**20.6-24.5**
Medium	**24.6-28.5**
Strong	**28.6-36.5**
X-Strong	**36.6+**

Extreme Lustre

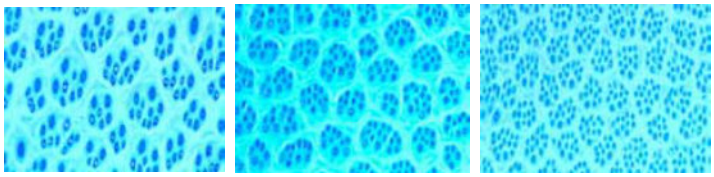


Histogram showing distribution of micron within the sample

Micron should be uniform over the body of the animal from the neck through the body to the rump.

Assessment of micron can be done visually (this takes some practice) or using a fibre testing laboratory (the output of which is a detailed report and histogram showing distribution of fibre diameter in the sample). To assess micron visually, take a sample of fleece (it is often a good idea to do this on a number of different sites on the animal - shoulder, midside and rump), spread the fibres into a spiderweb and lay against a dark background for light fibres or light background for dark fibres. You should be able to see the fineness of the fibres, as well as any coarser fibres or guard hairs in the sample. Because guard hair is straighter than finer fibres, pulling fibres from the tip of a lock will expose the guard hair so they can be assessed for micron and number.

Laboratory analysis will provide a significant amount of information on the sample analysed (either a midside sample or an all-over fleece grid sample). The histogram will indicate the uniformity of the micron. A coefficient of variation (CV) should be less than 20% to indicate consistency of micron. Remember there will be some variation of results between different labs, different measurement machines used, inconsistencies in sampling, etc., so beware of using histogram results as absolutes.



Left to right: Micrographs showing low, medium and high density alpacas

Density: density is an important trait to look for in regard to return for fleeces and to help keep out dust and vegetable matter. Density is the number of fibres in a given area on an animal. Density is difficult to determine on an animal, although you will often see people (including judges) grabbing and lifting the fibre to determine density. However, this method cannot be used to compare animals of different micron or with different fleece growth. A coarser animal will usually feel denser than a finer one, an animal with 18 months of fleece will have much more weight than one with 8, and so this method should be used with caution.

A visual method to assess density is to focus on the number of fibres in a given area – when an animal is very dense, the staples are forced into many fine layers, forming what look like pages of a book when viewed from the side.

A simple way a breeder can identify dense animals within the herd is by recording fleece weights at each shearing (and then annualising) and have a midside sample tested for micron. To compare animals of different microns, the AAA Fleece Miron/Annualised Weight Matrix can be used to standardise the weights according to micron. This will give a basic idea of which animals have the higher density. Another method is to use the formula W/D3 (weight divided by fibre diameter (micron) cubed).

The scientific method of determining density is to take a skin biopsy and determine the secondary to primary hair follicle ratios and number of hair follicles in a square millimetre of skin.

Holt & Watts (2005) found in their study that finer animals have a higher secondary to primary follicle ratio and greater follicle density.

Guard hair

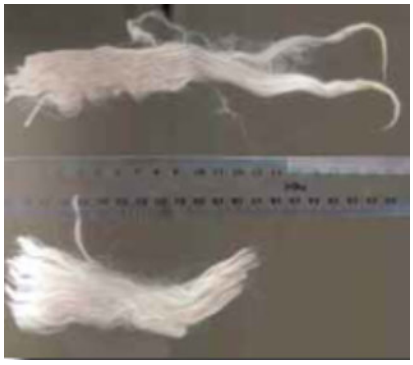
Uniformity: the locking, fineness and lustre of a suri should ideally be uniform over the body of the animal from the neck through the body to the rump and even extending down on the legs. Some animals are more uniform than others. When assessing an animal, open up and sample fibre from the shoulder, midside and rump and down into the belly and the brisket. Also look at the forelock for guard hair. It is common for there to be differences in locking style or quality across the body or from one side of the animal to another, more often visible in previously shorn animals as the first fleece hides a lot of variation. Inconsistent locking can be (but is not always) a sign of variation in micron, so assess micron if you see this type of lock variation. Remember to check the brisket for coarse fibres, locking and density. This is generally the poorest part of an animal and can give a lot of information about the rest of the fleece.

Some animals may have a spectacular first fleece but fail to relock as well on their second and subsequent fleeces. A well locked older animal maintaining fineness and handle will give you much more information on quality than a young animal on its first fleece. Inconsistencies in locking are much more apparent on an animal with regrown fleece, but a first fleece can hide many faults. Alpacas need to be producing high quality, useable fibre for at least 6 years, so it is important to concentrate on breeding animals that maintain their desirable fleece characteristics (lustre, fineness, uniformity) into older age.

Length: Suris generally grow 10-20 cm per year (more in the first year and less as they age). The acceptable lengths for processing suri are generally 90 - 140 mm, although shorter lengths (60-90 mm) can also be processed.

Greater than 150 mm is overgrown and cannot be processed by commercial or mini mill processors. It can be used by spinners and felters after hand carding, or as locks in wet, nuno and needle felting and for doll wigs, but these are small markets.

Length, in addition to micron and density, contributes to total fleece weight (and hence, value of the fleece) and so must be considered in breeding decisions. Shearing twice a year, as in the angora industry, may become commonplace as fleece lengths continue to increase.



Length and growth rate

Lock 'architecture': according to the AAA Suri Breed Standard, defined as well-defined pencil locks which persist throughout the fleece (not just on the surface) and are evident right to the skin. These can be curled, twisted or waves, but must hang down in individual locks. While there are a variety of different lock styles, current research has identified four locking styles. These are:

Twist ringlet - the staple twists around to form a ringlet which hangs straight down from the animal.

Wave & Twist ringlet - the twist ringlet also has a wave so that it does not hang perfectly straightly.

Corkscrew - the staple forms a tight corkscrew-type wave (a more pronounced version of the wave & twist).

Flat wave - the staple forms a broad wave with less evidence of twist, usually only at the ends.

Note that the twist ringlet and corkscrew lock styles are indicative of lower density. The favoured lock style globally, associated with greater density and lustre is the flat lock style. This can be in thin or broad ribbons. Often finely fleeced animals 'cross-fibre' as the fleece grows longer and lose their lock architecture. However, these animals generally lock up again after shearing.

In Australia, the show ring has been rewarding animals with highly independent locks. It should be noted, however, that tightly locked fleeces (especially tight twisted locks) are more difficult to process and result in greater breakage and lower yields. Once processed, all fibres are aligned and the type of locking is no longer relevant. Hence it is recommended that lustre, fineness, handle and density are not sacrificed for type or independence of lock. Judges are beginning to change their focus from locking to the range of traits that indicate quality fibre.

Colour: colour is personal choice; the whites and light fawns are more common and are generally of higher quality than the rarer coloured suris. For commercial processing, colour should be consistent across the body, however variations of light and dark are seen by some potential users of the fibre as desirable in adding depth and complexity to the finished garment. In the show ring, colour variation is penalised. In particular, dark fibres in white fleeces is a serious fault. White fibres in black or dark animals is less of a problem (can be overdyed) but should still be avoided in breeding.

Coverage: current convention is that the suri should be well covered, with a long forelock, and fleece on cheeks and from the chin, the front and rear legs should be well covered with consistent locking to the toes. However, in a commercial environment, there is no benefit (and possible detriment) in having coverage on lower legs and face.

Clockwise from top left: Twist ringlet; wave & twist, flat wave and corkscrew lock styles

" The handle is what holds suri apart from other fibres "

Genetics

There are two things that are important to understand when looking at suri genetics: The purity of the suri; and The quality and prepotence of the pedigree.

Purity: because the suri type is dominant to the huacaya in terms of crossbreeding, an animal that presents as suri may have little suri ancestory. For this reason, it is important to look at the pedigree of a suri to determine if there are huacayas in the background, how many and how far back. With animals imported from countries without a register, this is not available, so looking at the parents/grandparents to see if they have produced any huacayas will give you an idea of whether there is huacaya in the background. A suri that has one suri gene and one huacaya gene is called a heterozygous suri It has the potential to pass on either the suri or the huacaya gene each time it produces offspring (50:50 chance every time). A suri that has two suri genes is called a homozygous suri and can only pass on a suri gene to its offspring. It is important to recognize that breeding a heterozygous suri to a homozygous suri will reduce the likelihood that the huacaya gene is present over multiple generations, but does not exclude it from being passed on every time. Therefore a BC3 or BC4 suri (has been bred back to homozygous suri 3 or 4 times) can still be a heterozygous suri. Despite often looking like a quality suri on first fleece, a heterozygous suri does not have the qualities desirable in a suri and, most importantly, will not be reliable in producing offspring with quality suri charactristics.

For this reason, it is important to be aware of the pedigree of animals you are looking at, including mating partners for your females.

Genetics: In all livestock, there are genetic lines that perform better and more consistently for desired traits. In most livestock breeding, line breeding is used to cement those traits into a breed or herd so that the outcomes are reliable generation to generation. Due to the small genetic base of alpacas, and the fact that improvement in fleece quality is still on-going, it is probably too early to be linebreeding to cement in traits. However, this means that the results of matings can be unpredictable in terms of quality and colour. So relying on show results and the presence of high quality animals within a pedigree should not be undertaken without taking into account the phenotype of the animal and assessing its fleece and conformational traits.

While there are some highly prepotent animals that can improve on whichever animal they are bred to, these are rare and even the most highly sought out males have produced substandard progeny. This is the nature of genetics. But again, researching and assessing all the ancestors in a pedigree will increase the likelihood that you can determine the likely quality of progeny. And it is an enjoyable rabbithole to go down if you are interested in understanding suris.

Consistency of fleece quality. Same animal above as a two year old and below as an eight year old

Below: Presence of microstaples indicating density

Quality suris in first fleece (left) and third fleece (right)

Conclusion

Regardless of your budget or the size of your farm, by assessing both the characteristics of the animal and the pedigree, you can ensure that you are getting what you pay for. Buying fewer, higher quality females and investing in quality matings will be a better use of a budget than buying more females that need improvement. Ask the seller for fleece analyses, health records and mothering abilities, obtain fleece samples of the animal in question and sire and dam. Ideally, you should inspect the animal but if this is not practical, make sure you ask for and receive sufficient information to make an informed decision. Regardless, the suri breeding journey is a challenging and exciting one, with demand for quality fleece increasing from year to year and breeders throughout the country and overseas always looking for quality genetics to add to their breeding programs.