

Breeding & Genetics

WHAT TO LOOK FOR IN A SURI

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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 ears may be slightly longer and the muzzle shorter than a huacaya.

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 distinguishes the suri. When assessing a suri, you should look for the following:

- Lustre;
- Fineness ;
- Density;
- Handle;
- Uniformity;
- Length (staple growth for age);
- Locking;
- Colour; and
- Coverage.

Lustre: perhaps the single most important characteristic of suri fibre, lustre is the shine 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 spherical 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 have greater lustre than coloured animals. Use a subjective score of 5 (no lustre) to 1 (extreme lustre) to assess animals against each other. 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.

Fineness: the finer the fleece, the softer and more lustrous it is and the higher its price. Currently, AAFL does not have a superfine category, because of the very small amounts of suri fibre generally and in the superfine category specifically. 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.

The current AAFL classes for fineness are:

20-23 micron	Baby
24-27	Medium
28-33	Strong
>34	Adult

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

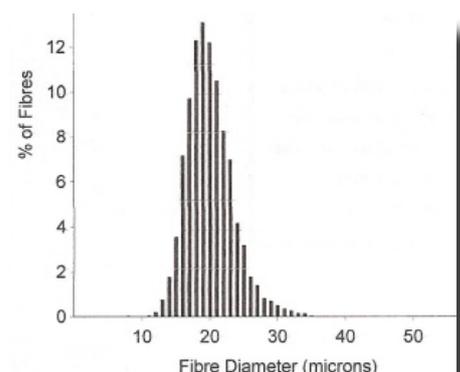
Assessment of fineness can be done visually (this takes some practice) or using a fibre testing laboratory (the output of which is a detailed report and histogram showing distribution of fibre micron in the sample). To assess fineness visually, take a sample of fleece (it is often a good idea to do this 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.

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.

Suris naturally have less medullation than huacayas, but this is something to look for when assessing an animal or a fleece. While some medullated (or hollow) fibres are acceptable in a fleece, the coarse medullated fibres called guard hairs cause problems in processing and increase the prickle



factor of finished goods. To assess for medullated fibres, pull at the tip of a lock - the medullated fibres will be obvious as coarser and straight fibres sticking out the top. A measurement of medullation is available as part of a fleece test at some laboratories, but only for white fibres.

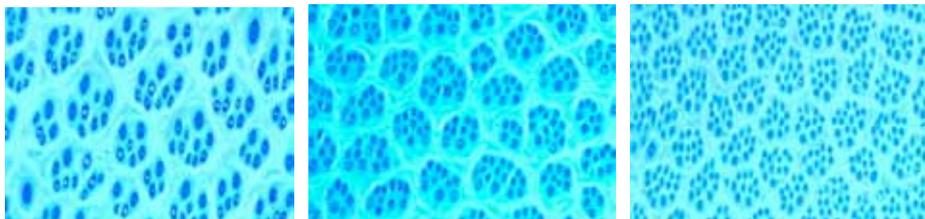


Density: is important in regard to return for fleeces and it also helps keep out dust and vegetable matter. Density is difficult to determine on an animal, although grabbing and lifting the fibre will give an indication of the amount of fleece (number of fibres) and fleece weight (determined by length, micron and number of fibres in a handful) on an animal. However, this method cannot be used to compare animals of different micron. A coarser animal will usually feel denser than a finer one and so this method should be used with caution and in conjunction with assessment of fineness.

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 that finer animals have a higher secondary to primary follicle ratio and greater follicle density. However, the breeder can identify dense animals by recording fleece weights and staple length at each shearing and have a midside sample tested for micron.

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 and nourishment of the fleece and can only be felt, not measured. By putting your hands into many suri fleeces, you will



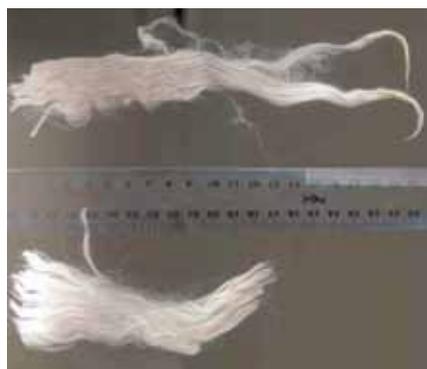
Left to right: Micrographs showing low, medium and high density alpacas

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.

Uniformity: the locking, fineness and lustre should be uniform over the body of the animal from the neck through the body to the rump and even extending down on the legs. When assessing an animal, open up and sample fibre from the shoulder, midside and rump. Also look at the forelock for medullation and locking and the tail (particularly important in previously shorn animals). 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, particularly in coloured animals. Remember to check the apron for coarse fibres and guard hairs.

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.

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.

Lock 'architecture': 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.

Whatever the lock style, locking should be consistent over the animal, from forelock to tail and should

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



“The handle is what holds suri apart from other fibres”

continue for the whole length of the staple (from tip to skin). Often when the fleece becomes longer, the tight twist evident at the tip flattens into a fan-shape where it joins the skin. 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.

The show ring currently rewards 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.

Colour: colour is personal choice; the whites and light fawns are more

common (about 90% of Peruvian clip), 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.

Coverage: current convention is that the suri should be well covered, with a long forelock, and fleece on cheeks and from 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.

Applicability to the AGE

Australian suri breeders are developing criteria to use in the Across-herd Genetic Evaluation (AGE) service for

alpaca, which will allow evaluation of animals within a breeder’s herd and assist in making breeding decisions by comparing estimated breeding values for stud sires.



Six year old suri with great relocking and coverage