

GUIDE TO BEST PRACTICE ALPACA FLEECE INDUSTRY SHEARING SHED & PRE-CLASSING PREPARATION 2016



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ALPACA FLEECE INDUSTRY

A GUIDE TO BEST PRACTICE

SHEARING SHED & PRE-CLASSING PREPARATION 2016

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This Guide of Best Practice has been prepared by Cameron Holt for Alpaca Breeders as a guide to Shearing Shed Best Practice.

Its aim is to develop a self-regulatory approach to the shed preparation of fibre using a philosophy of a QUALITY MANAGEMENT approach. This code of practice is an integral part of the quality assurance standards required for the preparation of alpaca fibre in the shearing shed.

INTRODUCTION

Although the alpaca industry has advanced there still remains a sector of breeders whose herds display variety in colour and quality within their fibre harvest. Quality variation is a primary factor adding to the difficulty of preparation of fibre, particularly where numbers within herds are small (alpaca fleece has considerable variation between animals, differing parts of the fleece and within a single staple).

To become successful suppliers of alpaca fibre to the craft and textile industry, breeders must take the initiative to learn how to properly harvest and prepare their fibre on the farm.

These guidelines are designed only for shearing shed fleece preparation.

They should be read in conjunction with instructions issued by their Alpaca Association, fibre brokers, classing houses, mills and craft organizations that plan to purchase the growers' fibre.

AIMS OF CLIP PREPARATION

- Production of quality fibre.
- To provide a textile fibre with a high degree of consistency which processors may use with confidence.
- To maximize the net financial return to alpaca fibre producers.

This can be achieved by:

- Breeders keeping abreast of preparation standards.
- Joint education ventures of the Australian Alpaca Association, Education Institutes and qualified training consultants.
- Regular ongoing workshops, field days, etc.
- Through the members' magazine and newsletter.

Fibre characteristics, which are important in processing alpaca, are:

HUACAYA

- **Uniformity in fibre type**
- **Fineness (and uniformity)/ handle**
- **Colour integrity**
- **Length of staple**
- **Tensile strength**
- **Lack of guard hair**
- **Crimp structure**
- **Brightness**
- **Yield**

SURI

- **Lustre**
- **Fineness / handle**
- **Colour integrity**
- **Length of staple**
- **Tensile strength**
- **Lack of guard hair**
- **Uniformity in fibre type**
- **Yield**

All of these characteristics can be manipulated through husbandry, breeding and management procedures.

- **FIBRE TYPE** is determined by breed classification and genetic makeup.
- **FIBRE FINENESS (& uniformity) / HANDLE** (diameter/micron) is primarily determined by genetic makeup but is also influenced by nutrition and health of the alpaca i.e. illness, stress etc.
- **COLOUR** is determined genetically. It is important to maintain colour consistency, particularly in pure colours such as white and black.
- **LENGTH** is influenced by genetics, nutrition and duration of fibre growth.
- **TENSILE STRENGTH** is influenced by health, nutrition and environmental factors such as climate.
- **GUARD HAIR** is determined genetically.
- **CRIMP / LOCK STYLE** is determined by breed (Huacaya / Suri) and correct selection for breeding/genetics.
- **BRIGHTNESS / LUSTRE** are determined genetically and correct selection for breeding/genetics.
- **YIELD** is influenced by genetics, nutrition/health, climate and duration of fibre growth.

PRODUCERS' / GROWERS' RESPONSIBILITIES

- to ensure the shearing shed is clean of all contaminants prior to shearing and that all equipment needed for shearing is in the shed
- to provide good lighting and adequate work space
- to provide adequate labour to enable correct preparation of the fibre
- to present the animals in a shearable condition
- to provide a safe and healthy workplace

SORTERS' RESPONSIBILITIES (on farm)

- to ensure that each fleece is carefully and correctly skirted (prepared)
- to ensure stain is removed, heavy vegetable matter removed, etc.
- to ensure prevention of contamination to the alpaca fibre, particularly cross contamination of colours.
- to supervise shed staff who are assisting with the fleece preparation, when an alpaca classer is not in attendance.

OH&S STATEMENT

Before shearing, a **risk assessment** should be carried out in the shearing shed. A copy of OH&S policies for the shearing shed should be obtained.

Care should be taken with the placement of electrical cords and aids such as dust masks, knee pads and shearing harness may be required. . Alpaca restraints should have sufficient clearance at the rear end to allow staff to walk freely around without stepping over any cords or restraints. First aid requirements should also be in the shearing shed along with a phone.

Refer to Health and Safety Executive Policies.

Before starting, it is important to clarify some terminology. **FIBRE SORTING** is basically the preparation of the fleece and the off-sorts of the fleece which are carried out prior to the fleece being classed. Once the fleece has had its final skirting on the skirting table it is then ready for the alpaca fleece classer.

The fleece is then **CLASSED** (sometimes called grading) into uniform lines of fleece (or pieces) which are suitable for the buyer/processor.

PRE - FIBRE HARVESTING

The preparation of the alpaca clip for sale is the culmination of the year's work. The fibre shorn reflects the 'total environment' experienced throughout the growing period.

As shearing time approaches, every effort should be made to protect the fibre from vegetation and environmental contamination. Such contamination will cause depreciation in the value of your fibre.

Prior to harvesting as the fibre goes through the shearing shed operation, two important operations take place.

1. SHEARING SHED DESIGN & SET- UP

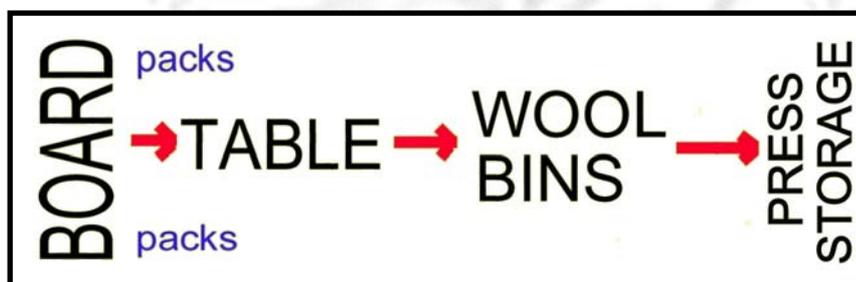
The shearing shed is a building constructed for the purpose of harvesting and sorting fibre in an efficient manner with minimal contamination. When these sheds are constructed consideration has to be given to a number of key factors. Currently for the alpaca breeders this would be:

- location on the property
- overall design of the shed
- orientation
- ventilation
- equipment required in the shed during the shearing process
- off season use of the shed

There are many designs available that breeders can avail themselves of for the construction of such a shed. Consideration also has to be given to the animal holding yards out side and under cover. Either the shearing shed or the yards should contain a covered area where the alpacas can be placed the night before shearing so as to keep them dry.

The SET-UP of the shed must pay attention to the relationship of the shearing board where the animals are shorn to the fleece area where the preparation/sorting takes place.

A simplistic design is shown below to demonstrate this design.



One of the key requirements of this fleece area is, if possible, good natural light and if this cannot be available, artificial fluorescent lighting with light that projects a natural white light.

While not everyone can erect a building devoted to fibre collection, consideration and care should be given to prepare the area where annual shearing will take place.

If a shearing shed is not available, choose an area under cover, where heat, strong drafts, rain or snow will not be a problem should the weather change during the course of shearing time. An area of your shed or a garage would be options providing there is **adequate space for both the shearer and crew to work** as well as space for record keeping and sorting of fleece as it comes off the alpaca.

The area must

- have appropriate flooring,
- have adequate lighting or the option to add additional lighting,
- be cleaned of all contaminants before shearing begins.

Animals should not be shorn on gravel, dirt, concrete or grass etc. It is desirable to shear on a wooden floor; **Poly tarps should not be used. There are a number of rubberised mats that would be suitable (fibre does not adhere to these).**

SHED OR SHEARING AREA PREPARATION

A discussion with your shearer should take place well in advance of shearing dates to determine the expectations of your shearer and also your expectations of him/her. Some shearers use a shearing table to work on rather than on the floor and **your shearing area or shed must be spacious enough to adequately accommodate this equipment.**

It is most efficient to sort the fleece as it is taken off the animal, and to skirt the fleece on a table on the day of shearing.

However, whether it is done at shearing time or a later date, a fleece-sorting table is an essential piece of equipment.

FLEECE SKIRTING TABLE

This can be easily constructed. A 2.5 x 1.5 metre wood or metal frame covered with 2.2cm (1") square plastic mesh will enable the fleece to be assessed, skirted and also allow second cuts to fall through to the floor. If your climate is very dry, metal mesh is recommended as plastic can gather a static charge, causing fleece to stick to the mesh. Frame height should be at waist level for the person sorting the fleece to reduce back strain. The table should be large enough to take your largest fleece.



The shearing shed or area must be clean of all contaminants such as bale twine, poly feed bags, cans and other metal objects and all other animal fibre. Floors should be swept clean of all feed, hay and dirt etc., keeping in mind that floor, general area and shearing table surface should also be swept clean when there is a change in fleece colour of the animals being shorn.

Cross fibre contamination is of major concern to processors.

The following may be a useful checklist for your shearing process:

CHECKLIST FOR CONTAMINATION

- Outside yards
- Pens inside shearing shed
- Shearing surface
- Fibre preparation area
- Fleece storage bags (check inside)
- Old "poly" bags or like
- Baling twine, etc



SAFETY CHECKLIST

- No objects protruding which can cause injury to animals or humans
- Check for tripping hazards (e.g. extension leads, ropes etc.)
- FIRST AID KIT (for both animals and humans!)
- PHONE and emergency phone numbers

STAFF CHECKLIST

- Shearers
- Fibre sorters
- Alpaca handlers

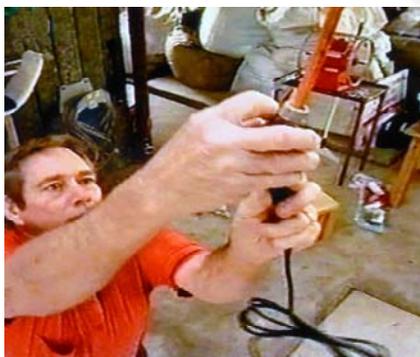
CHECKLIST FOR GENERAL ITEMS

- Fleece sorting/skirting table
- Scales for weighing fleece
- Bags for fleece – paper, cotton or perforated, clear plastic
- Brooms and vacuum cleaner
- Recording book and or computer

If applicable:

- Sample bags for fleece testing
- Tags for bags/ID slips for inside bag or indelible marker for plastic bags
- Ruler
- Approved colour chart and crimp (H) or lock style (S) chart

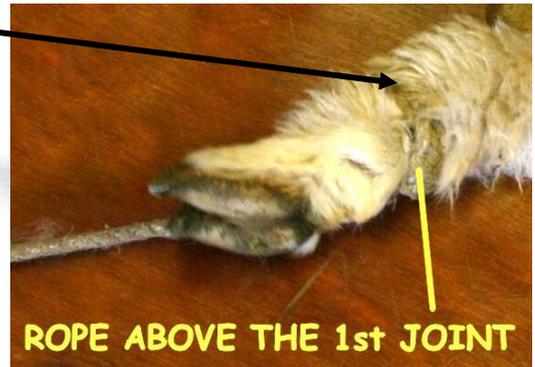
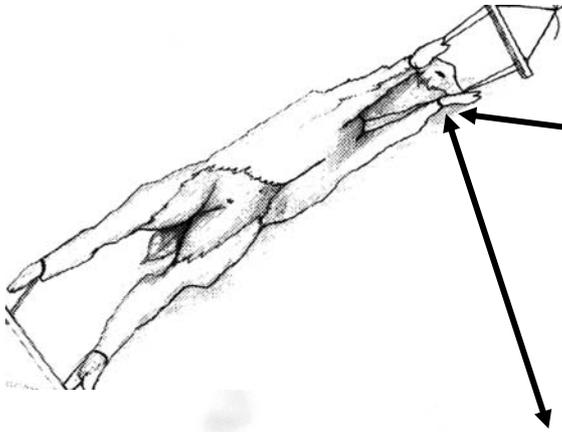
POWER



It is recommended that all power leads run from the roof so as to help the avoidance of accidents on the shearing board.

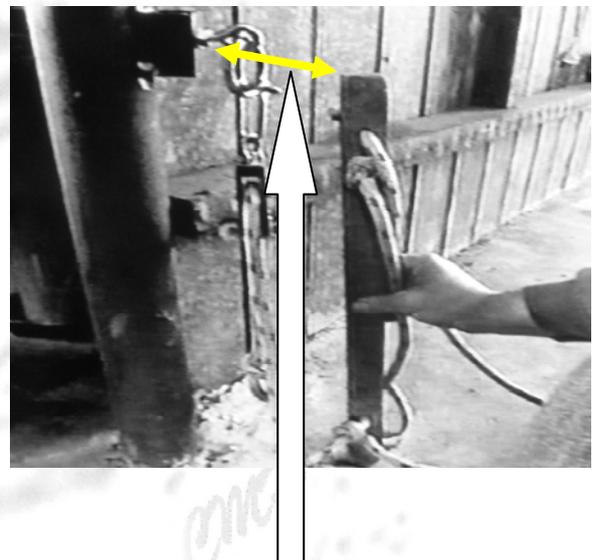
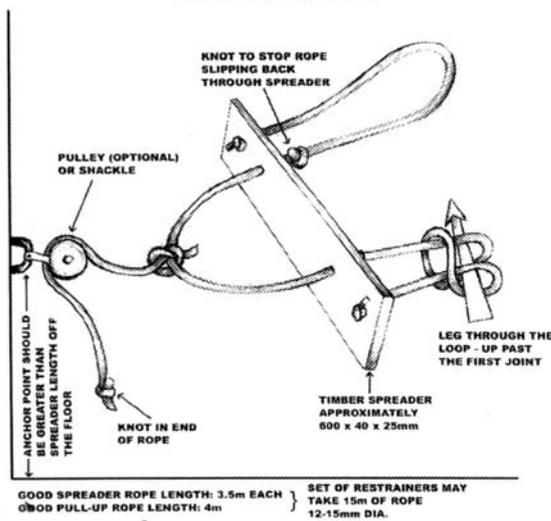


SHEARING RESTRAINTS



NOTE: Make sure that the leg restraint rope is correctly fitted up above the first joint.

RESTRAINTS



Anchor point should be greater than the spreader height.

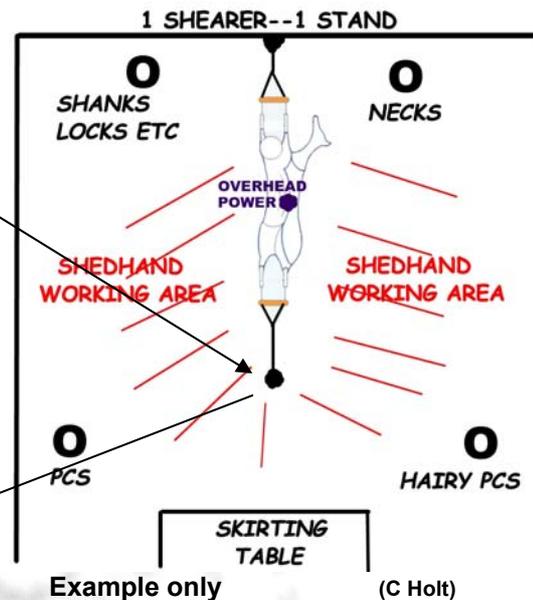
Drawings
AAAL shearing manual

SET UP OF SHEARING RESTRAINTS ANCHOR POINTS

The placement of the anchor points is a major OH&S issue. the shed hand should not be stepping over the restraint ropes whilst carrying out their duties.

One anchor point can be in the wall, and the other attached to a metal (or like) pole secured to or in the floor.

This enables the shedhand and broomie to walk around safely.



Example only

(C Holt)

DO NOT

IT IS STRONGLY RECOMMENDED NOT TO:

- TRIM TEETH
- TRIM TOE NAILS
- VACINATE

Or any other husbandry practice on the shearing board during shearing.



2. PREPARATION OF THE ALPACA HERD FOR SHEARING

It is important to prepare the animals *before* the shearing process. This involves:

- Do not feed chaff or loose hay for 24 hours prior to shearing (pellets are OK).
- Methods of cleaning each animal's fleece of surface contaminants (such as vegetable & mineral matter) just prior to shearing:-

Use a piece of wooden dowel to flick the alpaca fleece from the base of the neck to the tail. This will help minimise dust, grit and vegetable throughout the fleece by creating a static effect to aid in removing the offending contaminants.

The piece of dowel can be approx 300-400mm long and 20mm in diameter. A similar effect can be achieved by using a commercially available 'wand' made from heavy-duty wire with a wood handle. There are two different types available - one for Huacaya's and one for Suris. A horse scraper, palm brush or a piece of poly pipe could also be used to help remove some burrs.

Some breeders might decide to lightly blow out the fleece with a stock blower. Some breeders are using an industrial vacuum, such as a shop-vac.

This in inexperienced hands may cause problems to the structure of the fleece. It has been shown that incorrect blowing or vacuuming of the fleece breaks down the structure and integrity of the staple and locks of the alpaca fleece. When judging or classing a fleece the structure and integrity of the staple and locks is one of the key appraisal characteristics, along with micron, lustre etc.

CARE NEEDS TO BE TAKEN IF EITHER OF THESE OPERATIONS TAKES PLACE

- Keep animals in an area where recontamination will be kept to a minimum.
- Keeping animals dry before shearing is **ESSENTIAL**. Watch for dew on cold mornings and over sweating in areas of high humidity.
- Drafting animals for colour will reduce cross-colour contamination. Shear pure white animals first moving progressively darker through cream, fawns, browns, greys and finally to black. An accurate listing of shearing candidates and colours will help to avoid confusion on shearing day.
- It is advisable to shear working males separately from females.

Shearing should be carried out at the optimum time, taking into account climate and other environmental conditions in your area (prior to possible fleece contamination from vegetable matter i.e. grass seeds, as well as reproductive functions of the herd. Fleece should be at its maximum growth for the year (12 months).

Care should be taken to avoid inclement weather or excessive heat. Alpacas can die from exposure many weeks after they have been shorn.

SHEARING OPERATION

Having prepared the shed for harvesting of the fibre and employed the required labour, shearing can commence.

Two important factors need to be addressed when shearing your alpacas:

1. **Minimize stress on the animal.** The shearing process just through its actions will put some stress on the animals. Some will tolerate it better than others.
2. **Removing the fleece in a manner which does not damage the fleece or the fleece value.** Shearers should avoid second cuts and fleeces should have those second cuts, which remain, removed before packaging.

SHEARING

There are two basic methods for shearing:

1. **The lying down or prostrate position using restraints.**
2. **The shearing table.**

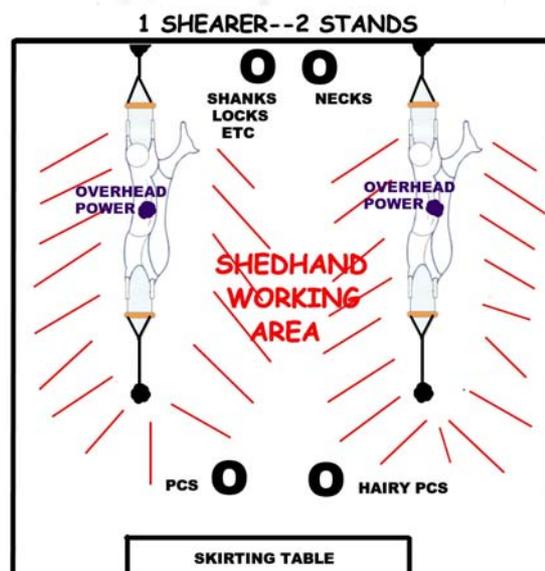
It is recommended that when shearing in the 'lying down' or 'table' position, removal of the fleece should be sectionalised and kept separate, that is,

1. Lower leg (shanks)
2. Belly
3. Apron
4. Neck
5. Middle leg
6. Saddle/blanket
7. All stains
8. Excessive vegetable matter

SHEARING STANDS (Stations)

The first question you need to ask is how many shearers do I need? The answer to this is determined by your shearing shed design (amount of room) and the number of alpacas you have to shear.

If you decide on one shearer, which is probably the answer to most breeders, you then have to decide whether you wish to have a second stand that can be used to get an animal prepared for shearing whilst the shearer is shearing on the original stand. The benefits of this are that it reduces the downtime the shearer may have whilst changing animals over on the original stand and it also increases the opportunity for a higher number of alpacas to be shorn on that day. The downside of course is the need for extra staff in the shed.



Example only (C Holt)

The method of shearing, as mentioned earlier, is a decision between the owner and the shearer. It is the observation of the author that the lying down on floor or table position is more successful from the point of view of fibre preparation and the minimising of risk to the animal and holders. In Australasia almost all alpacas are shorn in these positions and these methods are becoming more popular internationally. (The lying down position may or may not include a shearing table).

It is possible to use a **snow comb** when shearing in the summer months, especially the white animals, to leave a short layer of fibre to protect the skin from sunburn.

There are special camelid or mohair combs available.

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There are special camelid or mohair combs available.

SHED STAFF (Roustabouts)

Before organising your shed staff check with your shearer to ascertain if the shearer is bringing his own shed team. Subject to the response you will either need to add to the shearer's team or create your own shed staff. Examples of shed staff you may require are:

- Alpaca handlers (wrangler)
- Shed hand to pre sort off-types on the shearing board
- Broomie/general assistant (moving animals, assisting with preparing animals for the shearer)
- Shed hand to skirt fleece on the table
- General assistant for fleece weighing, recording, sampling etc.

The number of people required, as mentioned earlier, will be dependent on the number of alpacas being shorn on the day.

FLEECE BINS (Packs)

CLEAN fleece bins should be placed in the fleece handling area to accommodate the various off sorts from the shearing board and skirting table. **These bins are duplicated for all colours.** The bins are:

1. **Skirted fleece** (these are placed in individual clear plastic bags before being placed in the bin) **Note: this happens if no registered alpaca classer is in attendance.**
2. **Neck fibre** (each neck is placed in a small plastic bag e.g. shopping bag)
3. **Good pieces** (these pieces are relatively free of guard hair)
4. **Hairy pieces** (usually the fibre from the apron, hairy belly and coarse guard hair fibre from the legs)
5. **Heavy VM** (heavy vegetable matter)
6. **Shankings, stain and sweepings from floor** (all colours can basically put in this line)

The colour groups for fleece should be white (WT), light fawn (LF), fawn (FN), brown (BR), dark brown (DB), brown black (BB), grey (GY), dark grey (DG), rose grey (RG) and black (BK). Full colour range could be used if full bale weights are obtained.

Colours for necks, pcs etc, see in skirting section, page 15.

As mentioned earlier, alpacas should be shorn from the lightest to the darkest to avoid fibre cross - contamination.

PREPARATION OF FIBRE

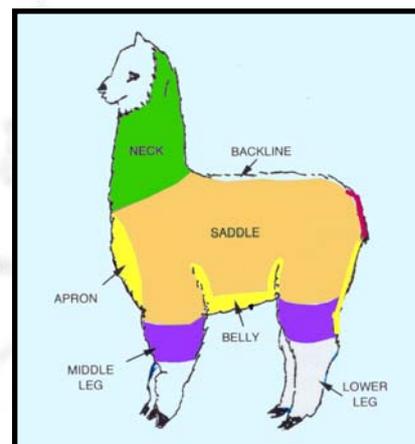
Is a **CONSTANT** and **REGULAR** PROTOCOL

ACTIONS and **PROCEDURES** ARE REPEATED

The aim of fibre preparation is to make lines of uniform grades of fibre or to prepare a fleece ready for classing in a rehandling facility. As previously mentioned, it is most time efficient to complete the on-farm skirting, sorting and grading at the time of shearing.

The various areas of the fleece are described as:

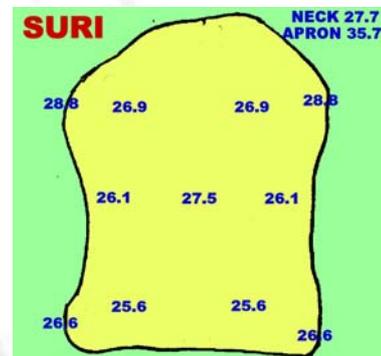
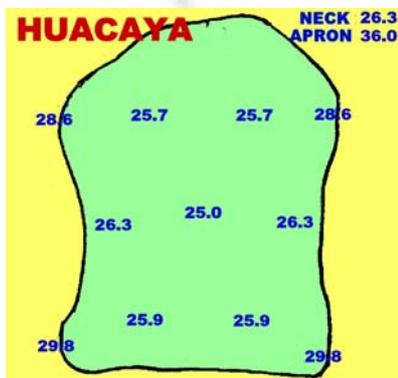
1. **LOWER LEG** – coarse, mostly hair-like fibre.
2. **BELLY** – if similar may blend with good pieces, but if coarse in appearance and with guard hair, should be placed with the next line (hairy pieces).
3. **APRON** – mostly highly medullated and coarse fibred. Always keep separate. Area may vary in size from animal to animal.
4. **NECK** – the fleece on the neck is normally similar to the saddle but is short in length. It is the shortness of length, which requires it to be separated. In most cases some increases in coarse guard hair fibres may be found in this area.
5. **MIDDLE LEG** – usually good, slightly stronger fibre but in some animals may be very strong with guard hair in the britch area. Generally stronger in micron compared to the saddle/blanket. In good fleece animals, may be shorn with saddle area.
6. **SADDLE OR PRIME BLANKET** – this should be the balance of the fleece. May represent approximately 60% of the fleece but this figure is highly dependent to the overall evenness of the fleece. Some saddle/blanket areas may be 80% and some 40% of the total fleece cut.
7. **STAINS** – all urine, dung, water stains and mud.
8. **VEGETABLE MATTER**- excessive vegetable matter contamination.



Research by Holt & Stapleton 1993, showed that as you moved from the middle of the saddle down to the extremities of the lower fleeced area, not only did the micron get coarser, but there was an increase in medulla size. *(The indications are that the extents of medullation across the fleece increases with increasing fibre diameter.)*

Notations of observations by the researchers showed that the greatest level of **guard hair** was seen on the apron and lower legs. The continuous medulla and broad medulla categories (which included guard hair types) were combined for this research.

VARIANCE OVER FLEECE



In suri fleece, the middle leg and saddle/blanket appears more uniform, where in actual fact it is similar to huacaya for variation

(Holt/Scott 1998).

It is important to remind breeders that alpaca fleece whether suri or huacaya, does range considerably across the entire fleece. An example is shown below from research in both Huacaya's and suri.

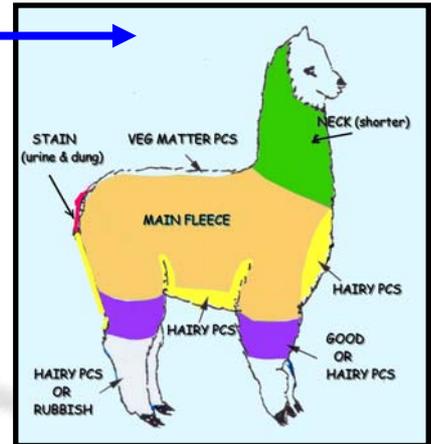
HUACAYA		SURI	
RANGE OF VARIANCE		RANGE OF VARIANCE	
(exclusive of apron)	(inclusive of apron)	(exclusive of apron)	(inclusive of apron)
25.0 – 29.8 microns	25.0 – 36.0 microns	25.6 – 28.8 microns	25.6 – 35.7 microns
(4.8 microns)	(11 microns)	(3.2 microns)	(10.1 microns)
HOLT / STAPLETON 1992		HOLT / SCOTT 1997	

Within both these huacaya and suri alpacas the odd individual animal had greater ranges with up to 20 microns (huacaya) and 32 microns (suri). These results included the apron fibre.

FIBRE SORTING

This diagram will give you an idea of the skirted fibre (off sorts), that you will encounter whilst carrying out the general preparation in the shed, prior to being sent away for classing.

Not all alpacas are the same so some deviation to the examples given will obviously take place, for example, where alpacas are grazed in areas that have burrs /heavy vegetable matter etc., pieces in general will most likely go into a vegetable matter pieces line (VM PCS). After a number of shearings you will become used to this and readily identify these off sorts.



FLEECE BINS (PACKS)

Clean fleece bins should be placed in the fleece handling area to accommodate the various off sorts from the shearing board and in the shirting area. **These bins are duplicated for all colours.**

The bins for the shearing are:

- 1 **Neck Fibre** (each neck is placed in a small plastic bag e.g. shopping bag)
2. **Hairy Pieces** (usually the fibre from the apron, hairy belly and coarse guard hair fibre from the legs)
- 3 **Shankings, stain locks (second cuts) and sweepings from floor** (make white & all colours together in this line)

The colours for bin 1 should be white (WT) light fawn (LF), fawn (FN), brown (BR), grey (GY), dark grey (DG), rose grey (RG) and (BK) black.

Bins should be for 2&3 should be white (WT) and colour all in (MC).

Alpacas should be shorn from the lightest to the darkest to avoid contamination.

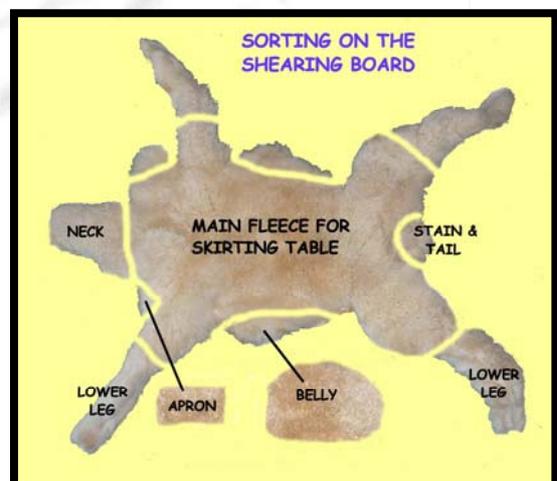
The Fibre sorting process comes in two parts.

1. SHEARING BOARD
2. FLEECE SKIRTING TABLE

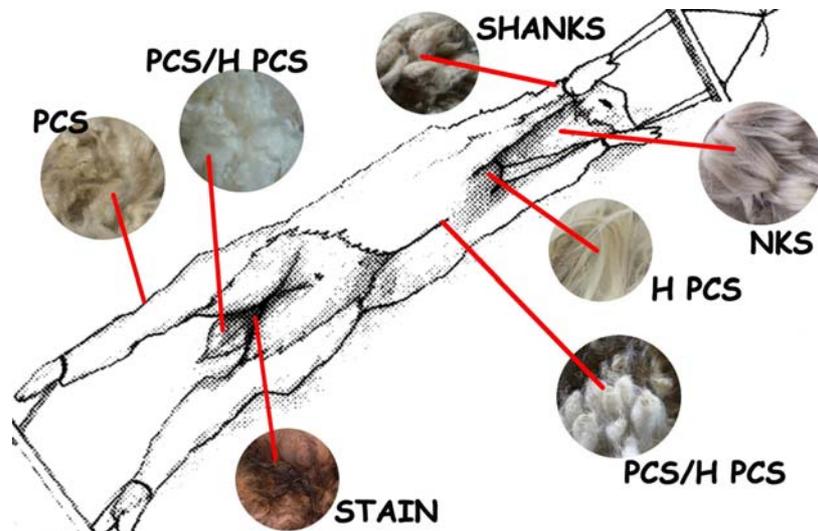
1. SHEARING BOARD

Sorting begins on the shearing board with the shed hand who is working in conjunction with the shearer.

It is the job of the shed hand to remove the off-sorts (heavy guard hair/ kempy fibre that is found around the lower leg, belly, apron (the belly and apron could come off the alpaca intact or be on the sides of the fleece), as well as the back of the rear legs and where the front and rear legs join the main body (Barrel). The neck is good fleece (but shorter).



Shearers do not always remove the fleece in the same manner. Some shear in sections, or take the saddle off first; others shear not unlike sheep, and some with their own system. The shedhand needs to identify and know where the off-sorts belong.



This fibre should be placed in the appropriate container/pack (or plastic bags) according to its type.

The neck fibre should be collected and placed in a container so that the fibre can be weighed if necessary and inspected by the fleece skirter (sorter) who is responsible for the overall preparation of the fleece (if a classer is not present).

2. FLEECE SKIRTING TABLE

FLEECE BINS (PACKS)

Clean fleece bins should be placed in the fleece handling area to accommodate the various fleece from the skirting table. The bins are:

4. **Skirted fleece** (these are placed in individual clear plastic bags before being placed in the bin)
5. **Good Pieces** (these pieces are relatively free of guard hair)
6. **Heavy VM** (Heavy vegetable matter)

Note: The bins 1,2,3, on the shearing board are also used if required

The colours for bin 4 should be white (WT) light fawn (LF), fawn (FN), brown (BR), grey (GY), dark grey (DG), rose grey (RG) and (BK) black.

Bins 5 & 6 are should be white (WT) and colour all in (MC).

The main fleece (saddle) is carefully collected and placed on the skirting table. It is important to keep the fleece intact by either placing in:

- a plastic bag
- a container (e.g. plastic container)
- between paddle boards
- or if the fleece holds together (usually huacaya or matted suri fleece), it may be picked up by hand.



As the fleece is cut (shorn) side up, it needs to be inverted before placing on skirting table (so the fleece is tip/weather side up). Now carefully spread fleece on the table so as to keep its integrity.



**DO NOT SKIRT FLEECE ON THE SHEARING BOARD.
IT MUST BE DONE ON A SKIRTING TABLE.**

There is not a great deal of difference between the suri and huacaya shearing preparation protocol. Some differences may occur when very short fleece is being prepared.

SKIRTING HUACAYA & SURI FLEECE

A FULL FLEECE

As mentioned, the fleece is shorn-side down and tip/weather side up when placed on the table.

Firstly look for those off-sorts missed on the shearing board, that are still attached or clinging to the fleece

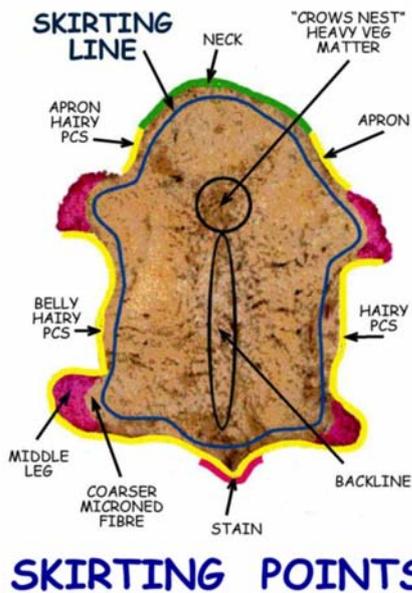


WATCH FOR CONTAMINATED FIBRES

B FLEECE SHORN IN HALVES

When the two halves of the saddle/blanket are shorn, it should be spread out on the skirting table in a mirror image to the other side, and use the same procedure to skirt as for the full fleece.

SKIRTING PROCESS



HUAYACA

Using the diagram displayed as a guide, try to recognise the various parts of the fleece. Having established that, you should now know where to look for any:



← neck,
belly, →



← middle leg, →



← short fibre, (second cuts),

heavy guard hair (apron),



← lower leg

and stain etc.



NOTE: The SKIRTING LINE is there as a guide only, and may not be required if the fibre is consistent throughout the fleece.

It is advisable to try to start your skirting in the same place to help develop a repetitive routine.

On the flank (side) areas some guard hair may appear as this area attaches to the belly region. Also up near the neck end, you might find apron fibre that will be more 'hairy'. In the areas behind the front leg, in front of the back leg and down the back leg, coarser and more hairy fibre may also be found.

The skirtings (pieces) should be placed in "two groups" - good pieces (see later for advanced sorting) and hairy pieces.

The good pieces will generally come from the lower to upper middle leg area (varies between alpacas). →



← The hairy pieces from the apron, belly and behind/front of the back leg and rear of the front leg.

The hairy pieces are those that contain excessive amounts of guard hair and the good pieces will contain small amounts of guard hair.



These pieces should be matched with those similar types that have been removed on the shearing board.



Inspect the backline for increased dust and VM (compared to the main fleece).

← Also the base of neck (crows nest) for excessive vegetation. →



Check the backline for tender, particularly in suri fleece.

Having removed those off-sorts that were left on the fleece check around the edges to make sure there is no **coarser fibre left (usually around middle leg area),**



that is excessive in micron to the balance of the fleece.

Provided that the fleece is light for guard hair, it could be matched to similar fleece off other animals (for micron, length, colour style, etc.)



BASIC HUACAYA PIECES LINES

GOOD PCS >50 mm	White	All Colours	HAIRY PCS >50 mm	White	All Colours
	WT	all colours to be blended together as codes shown: ML MD MG		WT	all colours to be blended together as one code: MC

SHORT PCS 30 - 50 mm	White	All Colours
	WT	all colours to be blended together as one code: MC

STN	DES C	White	All Colours
	All stain	WT	all colours to be blended together as one code: MC

LKS	DESC	White	All Colours
	All locks & sweepings	WT	all colours to be blended together as one code: MC

ADVANCED SORTING (for larger herds of a dominant colour)

Experienced sorters could further grade the off-sorts which have been removed from the fleece. The two main off-sorts would be the good pieces and the necks.

To be economical it would need to be a larger herd with a particular emphasis on one colour.

GOOD PIECES HUACAYA

<p>A. <u>Herd with micron range of 22 microns and finer</u></p> <p>Make TWO lines of each colour code + = MAIN LINE</p> <table border="1"> <thead> <tr> <th>DESCRIPTION</th> <th>MICRON</th> </tr> </thead> <tbody> <tr> <td>+ Superfine</td> <td>20 & Finer</td> </tr> <tr> <td>Medium</td> <td>21/28</td> </tr> </tbody> </table> <p>minimum length 50mm</p>	DESCRIPTION	MICRON	+ Superfine	20 & Finer	Medium	21/28	<p>LENGTH minimum length 50mm</p> <p>SEPARATE FOR FINENESS GROUPS AS SHOWN</p> <p>Colours to be blended together as SHOWN BELOW</p> <table border="1"> <thead> <tr> <th colspan="2">GROUPINGS</th> </tr> <tr> <th>COLOUR</th> <th>CODE</th> </tr> </thead> <tbody> <tr> <td>WT</td> <td>WT</td> </tr> <tr> <td>LF</td> <td>ML</td> </tr> <tr> <td>FN BR RG BB</td> <td>MD</td> </tr> <tr> <td>GY BK</td> <td>MG</td> </tr> <tr> <td>ALL</td> <td>MC</td> </tr> </tbody> </table>	GROUPINGS		COLOUR	CODE	WT	WT	LF	ML	FN BR RG BB	MD	GY BK	MG	ALL	MC
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Refer "ALPACA FLEECE CLASSING CODE OF PRACTICE" for code information.

A guide to identifying the 20 micron group of Huacaya "good pieces"

If you refer to the page 14 "variance over the fleece" and the bottom of page 19, you would see a tendency for pieces skirted from the fleece on the table to be around 2 microns stronger for micron than the main fleece itself. These pieces would normally be graded as "good pieces", unless they contain higher amount of guard hair.

For those breeders who have difficulty appraising micron readily the following might be beneficial to you. If you can assess the micron on the overall fleece and you assess it as 20 microns, add 1- 2 microns to that for your estimation of the pieces. That would mean that the pieces would be about 21-22 microns and they would be grouped in the 21 - 28 micron range. If however you assessed the fleece at 18 microns or finer and adding your 1-2 microns, would suggest that the pieces might be 19 or 20 microns and therefore eligible for the superfine classification of pieces. In a standard fine medium clip you would normally only expect to find superfine pieces in the one year old fleeces as these fleeces in general tend to be around 2 microns finer than the equivalent two-three year olds.

There are breeders now who are specializing in breeding alpaca fibre down to 12 - 13 microns. As we see the increase in the breeding of superfine fleeces, these alpacas will probably still be sub 20 microns at 3 or 4 years of age and more of the superfine pieces will be evident.

If in doubt, keep it out and place it in the main line of 21 - 28 microns, remembering that all the 29 microns and coarser can be placed amongst the hairy pieces unless you have a market for that type to warrant it being kept separate.

NECK FIBRE

The longer good necks (**very low guard hair**) from the huacaya ranging somewhere around the 75mm to 50mm (average 60mm) could be placed together with the short fleece wool of a similar length.

This is referred to as a "C" length fleece.

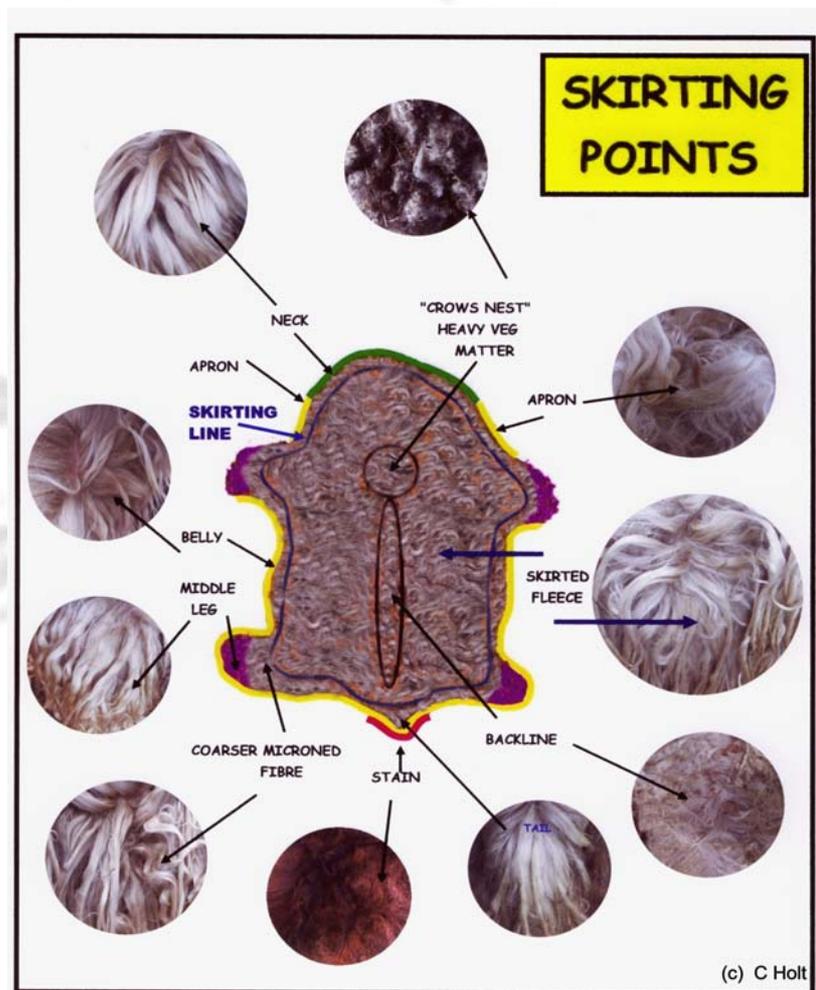


Those necks (**very low guard hair**) which are below the 50mm with a range of below 50mm to 30mm (average 40mm) could be placed together with the very short fleece of a similar length. This is referred to as a "D" length fleece.

The above must be similar for guard hair, VM etc to the fleece line.

SURI

The Suri skirting process is very similar to that of the Huacaya. You are looking in the same places for the same faults. However the preparation of the oddment lines may vary slightly.



(c) C Holt

BASIC SURI PIECES LINES

GOOD PIECES SURI

<p><u>GOOD PCS</u></p> <p>Make ONE line of each colour code</p> <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <thead> <tr> <th style="padding: 2px;">DESCRIPTION</th> <th style="padding: 2px;">MICRON</th> </tr> </thead> <tbody> <tr> <td style="text-align: center; padding: 2px;">Medium</td> <td style="text-align: center; padding: 2px;">28 & FINER</td> </tr> </tbody> </table> <p># 29um & stronger good pcs to HAIRY PCS below</p>	DESCRIPTION	MICRON	Medium	28 & FINER	<p>LENGTH minimum length 50mm</p> <p>SEPARATE FOR FINENESS GROUPS AS SHOWN</p> <p>Colours to be blended together as SHOWN BELOW</p> <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="background-color: #0000FF; color: white; text-align: center;">GROUPINGS</th> </tr> <tr> <th style="background-color: #00FFFF; color: black;">COLOUR</th> <th style="background-color: #00FFFF; color: black;">CODE</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">WT</td> <td style="text-align: center;">WT</td> </tr> <tr> <td style="text-align: center;">LF FN</td> <td style="text-align: center;">ML</td> </tr> <tr> <td style="text-align: center;">BR RG BB</td> <td style="text-align: center;">MD</td> </tr> <tr> <td style="text-align: center;">GY BK</td> <td style="text-align: center;">MG</td> </tr> <tr> <td style="text-align: center;">ALL</td> <td style="text-align: center;">MC</td> </tr> </tbody> </table>	GROUPINGS		COLOUR	CODE	WT	WT	LF FN	ML	BR RG BB	MD	GY BK	MG	ALL	MC
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STN	DESC	White	All Colours
	All stain	WT	all colours to be blended together as one code: MC

LKS	DESC	White	All Colours
	All locks & sweepings	WT	all colours to be blended together as one code: MC

Refer "ALPACA FLEECE CLASSING" for Suri code information for above.

Every fleece is different so the secret is to match like to like.

Skirting is a learned process and after practice you will find it easier to carry out this procedure.

Also look for a midside sample that may have been marked for removal (see later).

SORTING MULTI COLOURED FLEECE

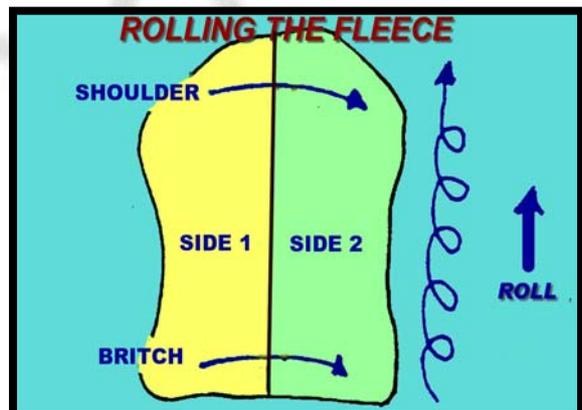
Where multi coloured fleeces are shorn (not grey or roan), the colour that is in the minority should be removed. **This would not be done if showing the fleece in a multi section of a fleece show.** In the case of some fawn fleeces, if the minority colour varies outside the current classing or showing standard tolerance, then remove only that area. (Refer to classing house or showing guidelines)

ROLLING THE FLEECE

HUACAYA

The fleece should then be folded and rolled into a bundle as shown. Fold side #1 over to side #2 and roll from the britch to the shoulder. This makes it easier to open for inspection, either for further classing or fleece judging.

Very short fleece may need a plastic cover over the table to avoid the staples falling through the mesh.



SURI

There are two approaches that may be needed when rolling a suri fleece.

1. When the fleece holds together, treat the skirting as described for huacaya.
2. When suri fleece is short (found in older animals) and traditional rolling of the fleece is not always possible to achieve, slide the fleece into a plastic bag. This should give you the best presentation for sale or showing.

If you find the short fleece (saddle) locks falling through the mesh on the table then use a plastic cover over the table to overcome this problem. If this is an overall problem for your flock, then another option would be to use a 1 cm (1/2") mesh over the table for this type of fleece.

FLEECE SHORN IN HALVES

As mentioned earlier, if the fleece is placed on the table as two halves together, roll the fleece as for a full fleece.

If the halves come to the skirting table individually, skirt the half fleece, fold it in half as shown above and roll in a similar manner. Place the two halves side by side in a plastic bag when finished.

Do not tie or bind the fleece in any manner, simply place in the bag or WOOL PACK if classer in attendance.

The sorter (or classer) will allocate the fibre, once the total fleece is weighed, to various industry lines

OR subject to the advice they have received from the organization where the owner intends to sell or process the fibre.

Constant brooming around the shearer and skirting table is most important to help avoid fibre cross contamination.

SHEARING SHOULD TAKE PLACE EVERY 12 MONTHS

Some suri breeders may for show purposes shear every 2 years. This is not desirable for processing. Over-long fleece has a tendency to cot (mat - entangle).

SKIRTING AT A LATER DATE

Some breeders (with few alpacas) who are not confident to skirt the fleece, or for whatever reason decide not to skirt the fleece at time of shearing can store the fleeces and come back to them at their leisure.

There are two recommended ways

The first (preferred method) way is:

- Place paper on the skirting table
- Place the fleece as normal on the skirting table on top of the paper.
- Then roll the fleece from britch to neck. The fleece will look like a big sausage and you can now place this in a plastic bag.
- If you intend to store this fleece for some time you should use a perforated plastic bag to avoid moisture content.
- When it comes time to skirt the FULL fleece, simply place the sausage on the table and unroll it. You will have no fibre entanglement and the fleece should look just like it was when you first placed it on the table.



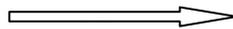
Failure to place paper under the fleece for this type of storage will mean the fleece will become entangled within itself and inadequate skirting will take place. Contamination could take place also.

The second method is:

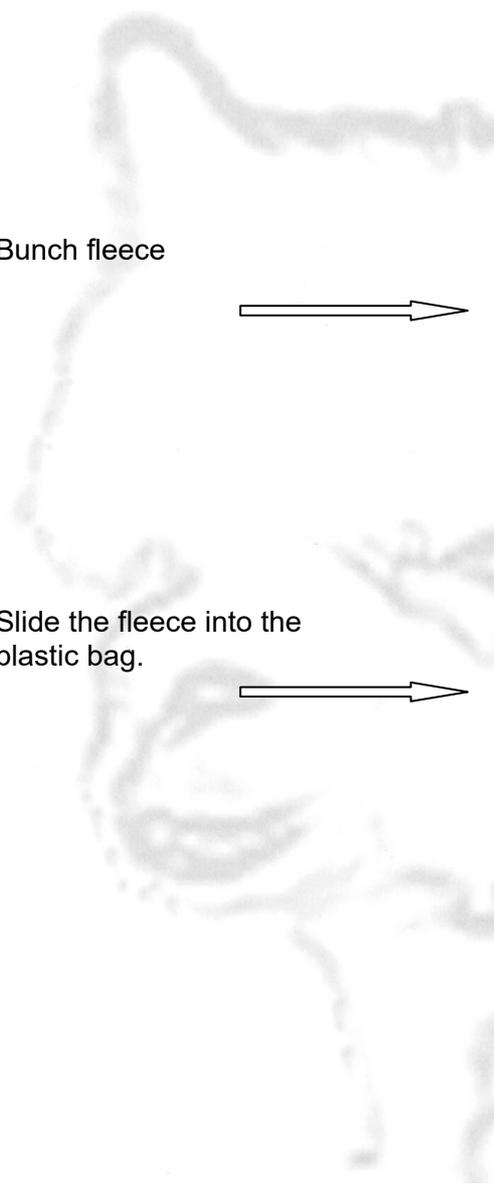
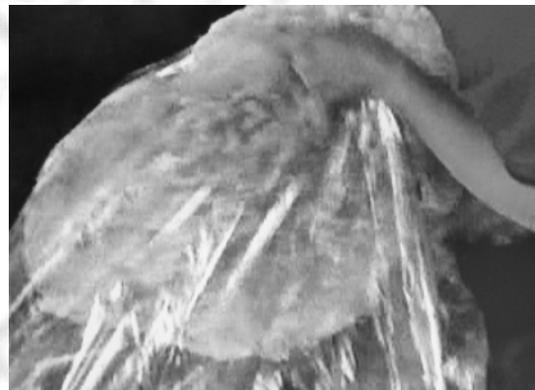
- Whilst on the shearing board, straighten fleece



- Bunch fleece



- Slide the fleece into the plastic bag.



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HERD RECORDS

Once the fleece has been rolled, it is time to record the characteristics of the individual fleece. Good fleece production records are an invaluable tool in helping to make appropriate mating choices. Tracking the fibre harvest information on an annual basis will also begin to provide a view of the 'big picture' of your herd fleece production capabilities after a few years.

It is recommended that the following information be monitored:

- **Estimated fineness/handle**
- **Colour** - carefully checking each fleece, particularly whites and blacks, for random coloured fibres. Colour contamination in the pure colour fleeces will put them into a different colour category and they must not be packaged together with pure colours.
- **Length** of staple
- Notation on **crimp character / suri lock style** and consistency
- Degree of **guard hair** - where on the body does it begin to increase
- **Total fleece weight**
- **Mid-side sample** - this sample (although scientifically biased) is a reasonable representation of the fleece considering it is a single site sample.

A sample 50mm X 50mm in size is drawn from the mid-side.

The sample can be taken directly from the animal prior to shearing (preferable) or at shearing time. If the sample is taken during the shearing process the sample area must be identified on the animal either by a chalk mark or by placing an elastic band around staples in the mid-side area. This sample is then collected when the fleece is being skirted.

The sample is placed in a plastic bag with a tag showing the alpaca's IAR number. Refer to testing laboratory for instructions.

Notation should also be made on any faults the fleece may have.

Does the fleece exhibit any sheen or lustre or is it dull, is it over-long in length. Also do a flick test for soundness and strength of the staple. To do this, pull a staple from the fleece, which is approximately the thickness of a pen or pencil. Grasp each end between your thumb and finger and pull to apply approximately 3 kg (7lb) of pressure. This is not as much as you might think, it is generally enough to cause the crimp to disappear with some additional gentle pressure.



While maintaining the pressure, flick the middle of the staple with your middle or third finger. If there is breakage, the fleece is tender and it will have difficulties withstanding the rigors of processing – this fleece should be kept aside. If only an odd fibre breaks (you feel the fibre stretching but not breaking) then this fleece should be able to withstand normal processing tolerances and can be treated as a sound fleece.

If the staple entirely breaks with great ease across one area, this is a major stress break. Stress breaks indicate that the alpaca has undergone some form of stress. It is important to utilize this information and determine what may have caused this to happen within the course of the previous year of the alpaca's life i.e. stress, sickness, change in nutrition etc. If there are a number of alpacas exhibiting tender fleeces then you will need to identify when the stress took place (indicated by where the break is in the staple) and you may need to assess your husbandry practices during the growth of the fibre, particularly at the problem time.

Tender fleeces are not valueless, as some breeders believe. They have to be kept separate so they can be processed through a different manufacturing system. They certainly

do not command anywhere near the value of a sound fleece, but still make satisfactory products.

When assessing the fibre use a contrasting background e.g. white on black and coloured on white, to clearly see the fibre characteristics.

BREEDERS should not do other husbandry tasks, such as trimming of nails, teeth etc., due to possible contamination of the fibre.

PACKAGING

Fleeces should be placed in clear plastic bags. The alpaca fleece when being sent for classing, should be packaged in the following groups.

- Skirted fleece (saddle/blanket)
- Neck
- Good pieces
- Hairy pieces

REMEMBER, BEFORE SHEARING STARTS REFER TO THE CLASSING HOUSE OR THE DESTINATION OF THE FLEECE FOR INSTRUCTIONS ON PACKAGING AND GROUPING ETC.

ALSO YOU COULD REFER TO "ALPACA FLEECE CLASSING CODE OF PRACTICE"

EXAMPLE (CLASSING HOUSE)

Fleeces up to a maximum of five can be placed in the one **large** plastic bag provided they are separated by newspaper.

NO POLYESTER, CHAFF BAGS OR SIMILAR SHOULD BE USED.

Lines of neck, good pieces and hairy pieces should be made with a sub grouping of the following colours - white, light fawn, fawn, brown, grey, roan and black.

All individual neck fibre from each animal should be placed in a plastic shopping bag and placed in a container according to the above indicated colours for neck fibre. The reason the neck fibre is placed in plastic bags is due to the variation of the length of the fibre.

The **good pieces and hairy pieces** are treated in a similar fashion. If the person responsible for the sorting is not confident making the separations then also place them in a plastic shopping bag and grade them as they think according to the above designated lines. Where the person is confident with their assessment, then the good pieces can be placed in those lines free from the plastic bag (that does not include necks).

NO MATTER WHETHER YOU SEND THE FIBRE FOR SALE OR SHOWING, THE SHED PREPARATION IS THE SAME.

STORAGE

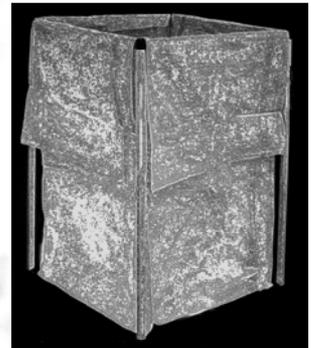
If your fleece is to be stored, use clear plastic bags, which can be closed to keep out pests such as bugs, moths and rodents. **Moth and pest prevention must be implemented.** Store fleece in a dry area with good air circulation and check frequently for any infestations or mildew in humid climates. Clearly identify the contents of the bags or containers.

A conscientious approach to harvesting your alpaca fibre will help to ensure that your product will maintain its highest value. With a little practise, the process will become very efficient and shipment of your fibre will become easier.

PACKAGING A BALE/BUTT

When no commercial wool press is available, a metal frame similar to the example can be constructed to house the fibre container. It is advisable to use a commercial sheep's wool pack for the outer packaging of all alpaca fibre. Fleece either in plastic bags or separately can be placed in this frame.

Metal with fibre container Procedure →



Place pack in the frame with the short side to the front. This is done for both the metal frame and any commercial wool press.

-Place fleece (plastic bag with fleece etc inside) in each corner (four corners).

-After three layers carefully compress (tramp) the contents with your feet and fill to the maximum capacity.

In the case of the wool press you will use the press to fill and compress the bale. →



-Close the bale and fasten bale with approved fasteners (refer chapter 7, Classing – wool pressing).

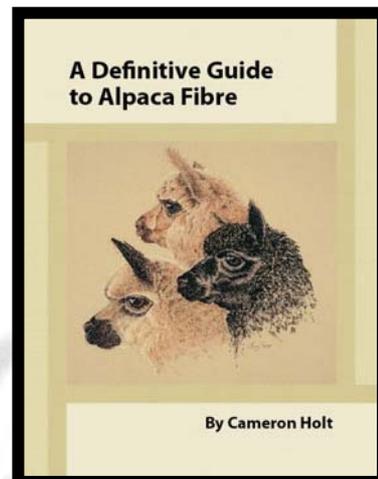
The contents and bale number should then be recorded in the **wool book** (shed book) by the person pressing the bale and also mark the bale number and fibre description on the side of pack with a texta (before the bale leaves the press). The bale is then weighed and the weight also recorded. Any information regarding this bale should be added to the wool book.

IF CLASSING TAKES PLACE in the shearing shed, then refer

REFERENCE

Available from

**The Australian Alpaca Association
Ltd, Melbourne, Australia**



Branding of Bales/butts.

The main items for bale identification/branding are:

Farm Brand

This could be the farm (property) name e.g. "FORESTGROVE" or the stud name e.g. "Monaco Manor Alpacas".

Contents. Contents of each bale is noted on the consignment note, but if classed by a classer is placed on bale.

Bale/butt number. Each bale has its own individual number. These bale numbers are sequentially generated by the order of pressing.

CONSIGNMENT NOTE : EXAMPLE

EACH GROWER TO COMPLETE ONE FORM PER CLIP.

PLEASE SEND TO CLASSING HOUSE/BROKER/ MILL/BUYER.

CONSIGNMENT NOTE

Trading Name: _____

Address: _____

Phone No.Home: _____ Business: _____ Fax: _____ Email _____

Contact Name: _____

Herd No.: _____

PAYMENT TO BE MADE IN THE NAME OF:

Business (if applicable).....Are you registered for VAT? Y / N

Name: _____

Address: _____

Colour: Description flc nks pcs other

Consigned by: (please tick)

Road	Rail	Post	Air	Hand
<input type="checkbox"/>				

Name of Transport Co.: _____

DETAILS OF CONSIGNMENT

Grower name:
 Address:
 P/Code: Grower no: (if applicable) Phone:

Bales	Butts	Bags	Wt: (weighed or approx.) KG	% of white	% of Huacaya	% of Suri
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.....
 CUT

& COPY (as required)

PLEASE PLACE FORM IN THE TOP OF YOUR BALES/BUTTS/BAGS.

Grower name:
 Address:
 P/Code: Grower no: (if applicable) Phone:

COPY TO: 1. Place in all main containers 2. Transport

Bales	Butts	Bags	Wt: (weighed or approx.) KG	% of white	% of Huacaya	% of Suri
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TESTING / FLEECE MEASUREMENT

If measurement is required, and has not been taken from the alpaca prior to shearing, then the sample should be taken prior to rolling the fleece.

It is recommended that the following protocols be adopted.

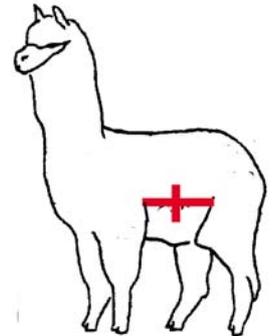
MID-SIDE SAMPLE

This sample (although scientifically biased) is a reasonable representative of the fleece considering it is a single site sample.

A sample 50mm x 50mm in size is drawn from the mid-side as shown.

The sample can be taken at shearing time or directly from the animal.

If the sample is taken during the shearing process the sample area must be identified on the animal either by a chalk mark or by placing a 'bright elastic band' around staples in the mid-side area. This sample is then collected when the fleece is being skirted.

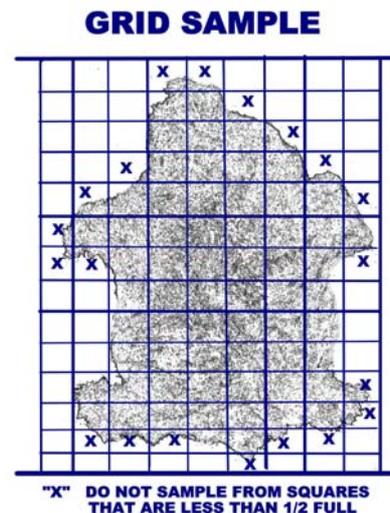


The sample is placed in a plastic bag with a tag showing the alpaca's IAR number.

GRID SAMPLING

This is the most reliable method of sampling.

- Spread the fleece to be sampled evenly over the table.
- A grid made of 100mm x 100mm is placed over the whole fleece.
- A staple (of equal size) is taken from each square more than 1/2 filled with fibre.
- The staples are **placed together in one plastic bag** to form a composite sample, with a tag showing the animal number.



Depending on choice, either the mid-side or grid samples are securely packaged for dispatch to a recognised testing house.

The tags should show -

- Animal's number
- Age of animal
- Method of sampling (important)
- Date of sampling

NOTE; Remember,

All testing must be put into context. Research by Holt and Stapleton 1993 showed that fleece on a huacaya alpaca indicated an **average difference of .77 microns** between the grid sample (**unskirted fleece**) and the mid-side sample (**on animal**). The **mean magnitude of difference was .92 microns**. These indicated a **correlation between the two sites of .93**.

Later research in 2004 by Davison and Holt on a huacaya fleece, where comparisons were made between a grid sample (**skirted fleece**) and a mid-side sample (**on animal**), showed an **average difference of .4 microns** with a **mean magnitude of difference of .87**. This was the equivalent of a **correlation of .94**. Breeders must remember that on **some alpacas the fleece does vary considerably**.

FLEECE WEIGHING

The fleece weighing takes place during the shearing process in conjunction with mid-side or grid sampling.

The following areas should be weighed -

Saddle/blanket) may be
 Middle leg) together
 Neck
 Pieces (good)
 Balance
Test sample

TOTAL kgs /lbs

The weights must be recorded against the animal's IAR number.

STUD RECORDING

You should code the information to record the fleece characteristics for each animal.

EXAMPLE:

BREED H (Huacaya)
 LENGTH A (measured 125mm)
 COLOUR WT (White)
 FINENESS M (Medium – estimated 26 microns)
 CRIMP 2 (Good Crimp)
 GUARD HAIR L (Light)

CODE would be: H A WT M 2 L or H 125 WT 26- 2 L

These lines should be used for your own recording in your stud.

Note: These are not necessarily classing lines.

HUACAYA

FINENESS

MICRONS (ave)	CODE	DESCRIPTION
<16 microns	H SU	Sheer Ultra ©
16 – 18 microns	H UF	Ultrafine
19 – 20 microns	H SF	Superfine
21 – 24 microns	H F	Fine
25 - 28 microns	H M	Medium
29- 31 microns	H S	Strong
32- 36 microns	H X S	EX Strong
37 microns & stronger	H C	Coarse

LENGTH

LENGTH	MM
A (20 mic & below)	100 - 110mm
A (21 mic & above)	100 - 140mm
B	75- 100mm
C	50 - 75mm
D	<50mm
O (O/L)	>140mm

SURI**FINENESS**

MICRONS	CODE	DESCRIPTION
below 18 microns	S UF	Ultrafine
19 – 20 microns	S SF	Superfine
21 - 24 microns	S F	Fine
25 - 28 microns	S M	Medium
29 – 31 microns	S S	Strong
32 - 36 microns	S XS	Ex Strong
37 & stronger	S C	Coarse

LENGTH

LENGTH	MM
A	100 - 140
B	75 - 100
C	50 - 75
D	<50
O (O/L)	>140

Note: These are not necessarily classing lines.

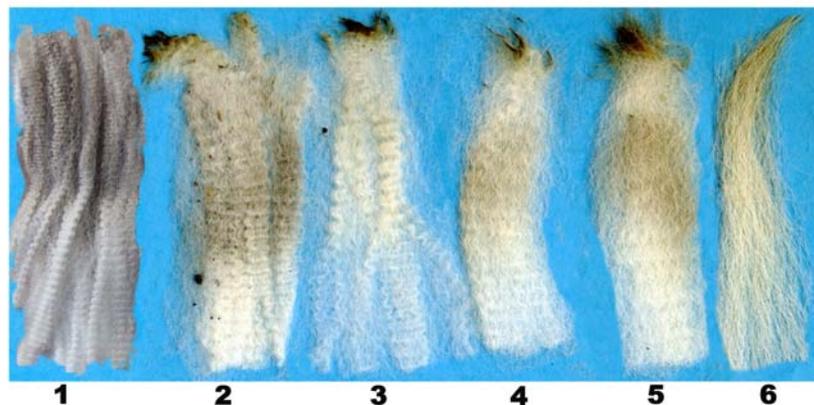
CRIMP (Huacaya)

CHARACTER RATING

The ratings for character definition are:

- | | | |
|----|----------------------|--|
| 1. | Excellent | – very evenly defined crimp with deep amplitude |
| 2. | Good | – well defined and regular crimp formation |
| 3. | Good/Average | – showing good to average crimp definition and regulation |
| 4. | Average | – showing some crimp definition but not as regular as No 3 |
| 5. | Average/Poor | – little crimp definition or regulation visible |
| 6. | Poor/Straight | – no crimp definition clearly visible |

Ratings for crimp character



SURI FLEECE TYPES

Suri fibre is basically a straight fibre and is used like mohair for specialised fibre production. One of the main difficulties when processing suri, (like mohair), requires some twist in the sliver so it will not pull apart during the drawing process. This is due to the lack of cohesion when spinning caused by the low, smooth cuticle scale structure. Processors have suggested that they prefer a fibre with a slight wave in preference to a straight fibre.

LOCK TYPE

SURI LOCK TYPES



Many variations of suri lock type exist. However, internationally, five types are commonly identified. These range from a tight ringlet, wave and twist ringlet (sometimes known as curled ringlet), corkscrew ringlet and large wave with broad lock. These four would be the most common of the five types with the other one being a straight fibred lock.

STYLE RATING

The ratings for LOCK STYLE are:

- | | |
|-------------------|--|
| 1 Excellent - | Ringlet, broad wave or wave & twist with excellent style, starting close to the skin. |
| 2 Good - | Any of the above that do not start its style close to the skin, but still exhibit very good style. |
| 3 Good/Average- | Any of the above that do not start its style close to the skin, but still exhibit good to average style. |
| 4 Average - | Any of the above types, showing average style |
| 5 Average/Poor - | 'Straight-ish' fibred lock with little style, but showing lustre. |
| 6 Poor/Straight - | Straight/chalky. |

FOR CLASSING INFORMATION, SEE
The Australian document

“ALPACA FLEECE CLASSING CODE OF PRACTICE”
Or

A Definitive Guide to Alpaca Fibre

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Drawings C Holt, G Fysh

Photos C Holt, G Fysh / Heiniger, N Clark.

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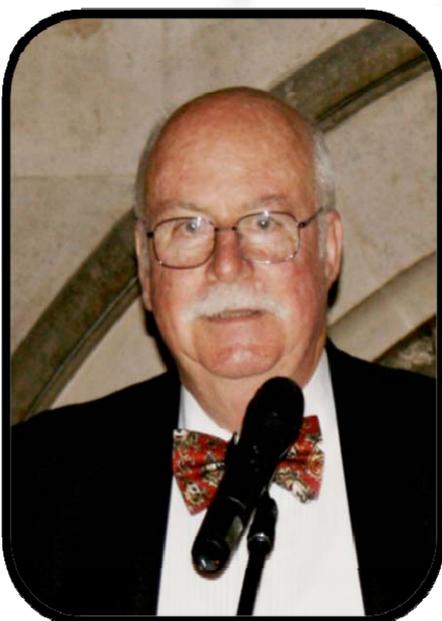
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It is important to understand the large variance still in the alpaca gene pool, as research results quoted in the book, with another research group of alpacas, the findings may vary slightly to those results indicated herein.

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AUTHOR

Cameron Holt, a leading international alpaca fibre expert has had some 50 years in the fibre industry with 25 of those later years dedicated to alpaca research and education.

In 1990, because of Cameron's long involvement with wool, mohair and cashmere, he was asked by the founding fathers of the Australian Alpaca Association to develop an educational program and to help in the setting up of standards for both testing and judging of alpaca fleece

In 2012 Cameron was honoured for his work with the alpaca industries in Britain and Australia with Life Memberships to their organizations. Cameron is still travelling internationally, advising and training for a number of alpaca associations.

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