ALPACA MYTHS (or are they)

By Cameron Holt © 2018

WHEN IS A MYTH NOT A MYTH?

"When it has scientific evidence to back up the statement"

Areas of discussion

#1 Alpaca is lighter than wool!

#2 Alpaca has a thermal insulation, 30% better than wool and Cashmere due to its hollow fibre!

#3 Alpaca is prickle free!

#4 Alpaca does not retain water!

#5 Alpaca is 7 times stronger than sheep's wool!
Alpaca has 3 times the tensile strength than wool!

#6 Alpaca is more durable than sheep's wool!

#7 People are not allergic to alpaca due to no lanolin / grease!
Alpaca does not have lanolin in the fleece!

#8 Alpaca resists solar radiation!

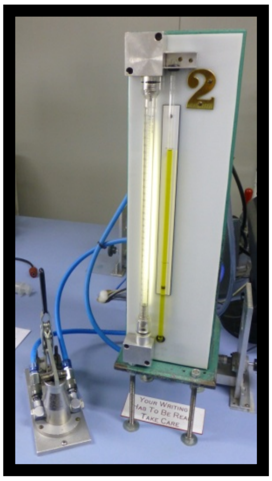
#9 Blue eyed whites are not deaf!

Before looking at these various myths which have circulated around the industry since the late 1980s and onwards, it would be fair to say some are obviously myths and some may be the result of various research which is not always been repeated in other trials.

I mention this because some research data from the 90s shows different results (although similar trends) to some of the research found today. If we were to now do research on a superior well bred stud we must surely find data more constant than if we tested a mixed herd like those seen in the early research. An example of this is the various differences that would be found in the characteristics of colour, micron, Co efficient of Variation/Standard Deviation which has improved, as well as definition of style and character and others within the fleece. This comment is based on early research of the writer compared to work which has been done at a later time. Data that I have been looking at in recent times also indicate improvement.

When data is close or inconclusive it is hard to say which is correct, except that the data is correct for that herd the data is taken from. <u>Therefore some myths may not be able to be confirmed or disproven.</u>

#1 ALPACA IS LIGHTER THAN SHEEPS WOOL!



LIGHTNESS

If you read the claims about the lightness of alpaca fibre you would say without a doubt that the Alpaca is lighter than wool. Like many claims, this has not been technically proven satisfactorily to date.

However, it is known that when testing fibre for micron using an airflow machine, a special calibration chart has to be used for Alpaca. The "Airflow Method" assumes that the fibres of a given (same) micron will have a constant density (1.31 g/c.c. - *{grams/cubic centimetre}*) and therefore all of these will have a similar amount of fibre surface in the given sample.

When the Alpaca 2.5 grams of the required sample of fibre are inserted in the chamber for measurement, they give a different reading to wool for fineness due to the medulla cell, which causes a finer reading for fineness ***(Airflow works on the principal of restriction of air over the surface area of the fibre in the chamber - the greater the surface area, the greater the restriction, the finer the micron).***

If alpaca is lighter, more fibre goes into the chamber (2.5 gms) creating a larger surface area. This suggests that alpaca fibre would be lighter.

CALCULATION CHART FOR WOOL **(Extract from original chart)**

Flow Height to Diameter Conversion Table

Height (mm)	Diameter (µm)	Height (mm)	Diameter (µm)	Height (mm)	Diameter (µm)	Height (mm)	Diameter (µm)	Height (mm)	Diameter (µm)	Height (mm)	Diameter (µm)	Height (mm)	Diameter (µm)	Height (mm)	Diameter (µm)
1	12.39	41	16.94	81	21.28	121	25.44	161	29.44	201	33.28	241	37.00	281	40.60
2	12.50	42	17.05	82	21.39	122	25.54	162	29.53	202	33.38	242	37.09	282	40.69
3	12.62	43	17.16	83	21.50	123	25.65	163	29.63	203	33.47	243	37.18	283	40.78
4	12.74	44	17.28	84	21.60	124	25.75	164	29.73	204	33.57	244	37.27	284	40.87
5	12.85	45	17.39	85	21.71	125	25.85	165	29.83	205	33.66	245	37.37	285	40.95
6	12.97	46	17.50	86	21.81	126	25.96	166	29.92	206	33.76	246	37.46	286	41.04
7	13.09	47	17.61	87	21.92	127	26.05	167	30.02	207	33.85	247	37.55	287	41.13
8	13.20	48	17.72	88	22.02	128	26.15	168	30.12	208	33.94	248	37.64	288	41.22
9	13.32	49	17.83	89	22.13	129	26.25	169	30.22	209	34.04	249	37.73	289	41.31
10	13.43	50	17.94	90	22.24	130	26.35	170	30.31	210	34.13	250	37.82	290	41.39

Alpaca has a separate conversion chart due to its lightness.

Limited research by the writer with the "CSIRO Portable Sonic Fineness Tester Model B" has so far given an indication of a similar trend to the "Air flow machine" in the variances' between sheep's wool and alpaca fibre. The sonic, as the name suggests, uses sound waves instead of air, but the principal of the measurement is similar.

Wool Medullated fibres appear to have a lower reading for density than those of a no-medullated type for wools density (1.31 g/c.c.). Airflow tests carried out on the medullated types of coarse crossbred wool showed a finer reading than those measured by the projection microscope (Richards 1954);

(Richards 1954)	SOLID	DEGREES OF MEDULLATION		
DENSITY (g/c.c.)	1.31	1.29	1.27	1.25
Apparent mean diameter (Airflow)	35	34.2	33.2	32.3

This indicated errors which are applicable to alpaca fibre if measuring by the airflow method, but adds support to the belief that Alpaca of the above 20 micron to the coarser groups becomes technically lighter as it increases in micron. ***Refer to medullated groups later.***
The superfine solid Alpaca fibres may not be affected!

Anecdotal evidence by many **people who wear alpaca claim it is lighter**. They of course do not take into account the construction of the garment, which is a major contributor to the allusion lightness.

Another comment on this is that **the processors say that alpaca fibre is heavy** compared to sheep's wool. In the case of Huacaya, this may be the influence of the curvature difference between Huacaya and Wool, and its behaviour during processing.

EG:

Wool; 26 microns .... 60 deg mm curvature.
Huacaya; 26 microns .... 33 deg mm curvature.

These results would have an effect on the ability to create bulk into the yarn (The higher the curvature the greater to create bulk), which is needed to construct fine bulky yarns similar to wool to produce light weight garments. This therefore means slightly heavier garments made of Alpaca.

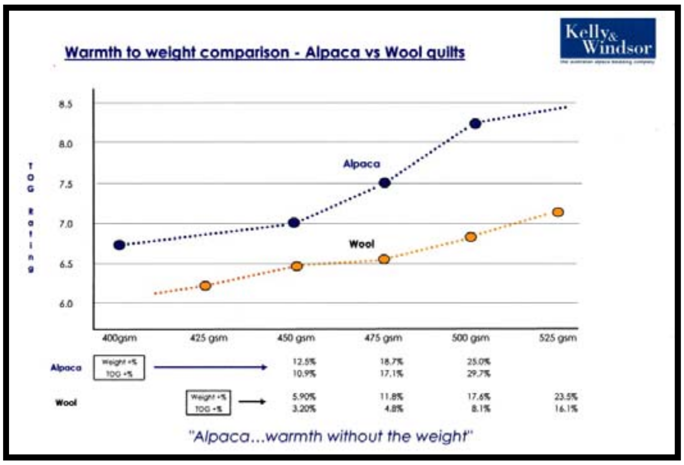
Suri is certainly similar to mohair and both are considered heavy by processors.

#2 ALPACA HAS THERMAL INSULATION, 30% BETTER THAN WOOL AND CASHMERE, DUE TO ITS HOLLOW FIBRE!

THERMAL/WARMTH

NON CONDUCTIVITY OF HEAT

Sometimes referred to as thermal properties, alpaca fibre does not readily conduct heat. ***(A steel rod would be an example of an object that readily conducts heat.)*** It is claimed by many that the insulating properties of Alpaca are greater than for sheep but this is not readily confirmed. However, it is considered that the construction of the garment where the fibres are not too closely packed together creates air pockets trapping the air, are more an aid to the insulating properties than the fibre itself. This phenomenon is also aided by the fact that woollen constructed clothes do not lay close to the skin and allow this circulation of air enabling the person to stay warm or cool depending on the external environment.



Research by Trevor Beuth of Kelly and Windsor suggests that it takes less alpaca fibre than sheep's wool to create the same level of warmth in quilts (Doonas).
A "TOG" rating (A British unit of measure for thermal attributes of quilts) shows here that a quilt of 450gsm, an alpaca would have a TOG rating of "7" and the equivalent weight of wool would have a TOG of "6.5". Wool needs around 12gsm extra to reach the TOG rating of "7" to equal the alpaca rating.

The data here clearly suggests that when the same volume of Alpaca and Sheep's wool is in a similar quilt, the Alpaca is not only warmer but lighter also.

British Alpaca breeder, fibre buyer and quilt maker (Alpaca Comfort Ltd), Shaun Daniel has also had a high "TOG" rating of 7.3 for his Quilts.

Designer and fabric maker Romano Favari, when looking at producing alpaca quilts decided to have a laboratory test carried out at an Australian "NATA" registered laboratory to see if alpaca was in fact warmer than wool*.*
The parameters in the various tests were the same for wool as for the alpaca. Unfortunately the results did not produce the same outcome as the "Kelly and Windsor" and "Alpaca Comfort Ltd-SD" as little difference was found in the research.

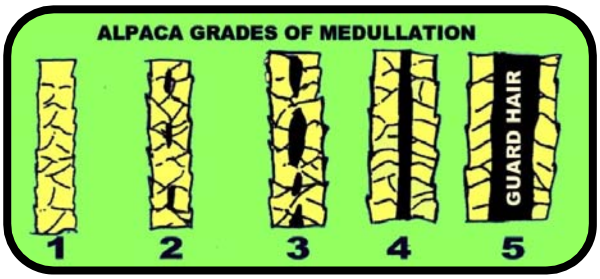
Authors comment

The K&W and AC research, to date, is the only published data that the author can find that demonstrates that alpaca is lighter and warmer than wool. Does this therefore suggest that Alpaca fibre is lighter and warmer than Sheep's wool and if so, by how much is Alpaca lighter and warmer? Or is this only in alpaca quilts where bulking is not needed as it might be in yarn. **(*Remember that the microns mostly used in the quilts are in the fine to strong group, which are subject to medullation, unlike the superfine and below alpaca fibres which are solid in density).***

MUCH OF THE CLAIMS FOR LIGHTNESS AND WARMTH IS BASED ON THE FACT THAT ALPACA IS HOLLOW!

Does it surprise you that not all alpaca is hollow,

Types of medulla and typical cross-section shapes found in Alpaca fibres.



Various research papers have shown that fibres below 20 microns are in fact basically solid

(1) Non medullated fibres, below 20 micron diameter
(2) Fragmented, 20-30 micron diameter
(3) Interrupted, 30-40 micron diameter
(4 Unbroken medium wide, 40-60 micron diameter
(5) Unbroken very wide, 60 or more micron diameter

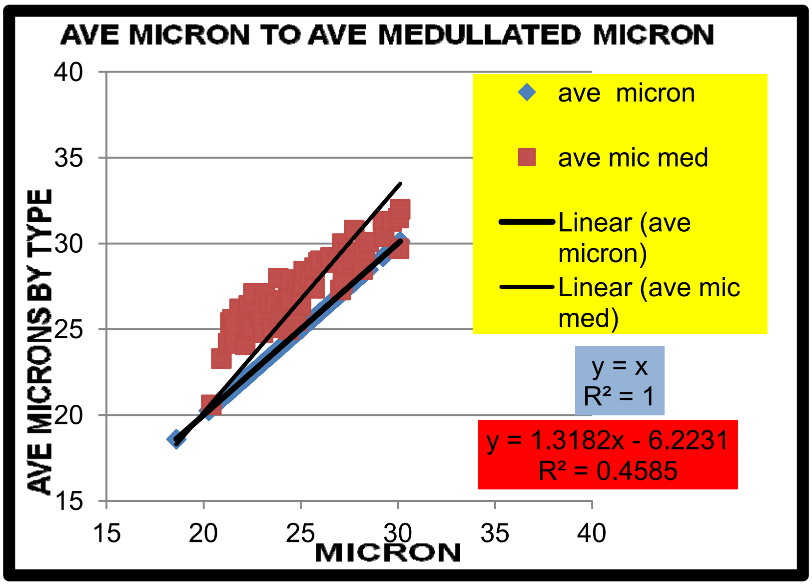
Group "5" is undesirable in Alpaca fleece.
(Research from J. Villarroel and C Holt/I Stapleton)

To unravel the myth we need to look at the data. Firstly Suri is not considered in this assessment as Suri characteristics are more similar to mohair than sheep's wool.

It is accepted that Merino, Polwarth and Corriedale type sheep's wool is solid throughout the equivalent alpaca micron ranges eg;

Below 16
17/20
21/26
27/30
31/34

There is an area of Alpaca which is thought to be hollow which is not in fact medullated. That is in the finer groups (<16, 17/20). Those fibres below 20 microns are basically solid (J. Villarroel and C Holt/ I Stapleton). This can be seen in the chart here.



Those fibres which are coarser than 20 microns have some degree of medulla/hollowness and this medulla gets bigger as the micron increases.

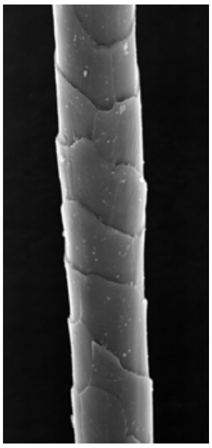
Note:

The graph shows that all of the fibres in this trial under 20 microns are solid in structure.

So we have a problem in our debate as the more sub 20 fibre that is grown there is less likely to be a medulla taking away the argument for lightness and warmth.

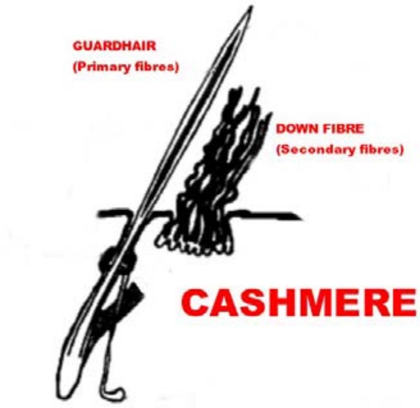
(Guard hair of 17 microns has been found in a fleece of 12 microns)

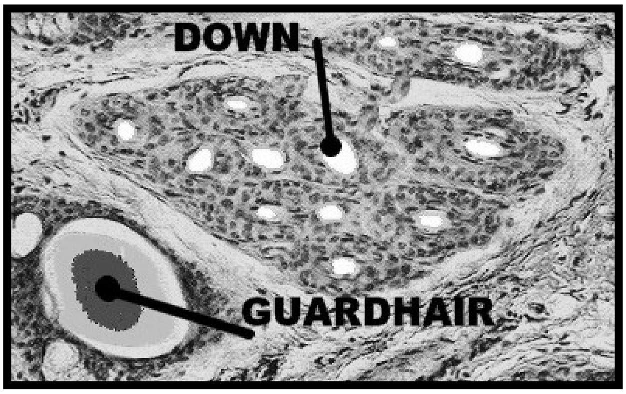
As I discussed earlier I think there are small grounds to conclude that in the fine to strong alpaca microns there is enough hollowness to interfere with the testing (airflow machine) and concurs that the Kelly and Windsor tests may have some validity.



Cashmere
Cashmere is the down fibre (secondary fibres) from the Cashmere goat. They have a similar internal structure to Huacaya (bilateral) and have a more crinkle like appearance.

Their micron ranges are around 13 to 16 (Chinese) and 16 to 19 (Iranian). The Cashmere also has a similar scale protrusion to alpaca fibre of around .4 of a micron whereas the sheep's wool is double that at .8 of a micron. (A Tillman)





We have a case where the only difference in my opinion between the Cashmere and the Ultra fine and superfine alpaca is that the alpaca is longer. I cannot find any evidence to suggest any real difference between these two fibres at this level of fineness. Of course we cannot forget that the Cashmere is a solid fibre like the alpaca of these micron ranges.

Taking these comments into perspective, I cannot find a research paper or statement which shows that the "super and ultra fine" alpaca fibre (being solid) is a 30 percent better insulator than wool or cashmere. However I could support the premise that that the Kelly and Windsor tests may have some validity for the duvets/ doona types, when compared to wool (solid) and the stronger Alpaca fibre which contains the "medulla cells". The study indicates these types are a better insulator but by what percentage is dependent to the weight levels being compared (see above).

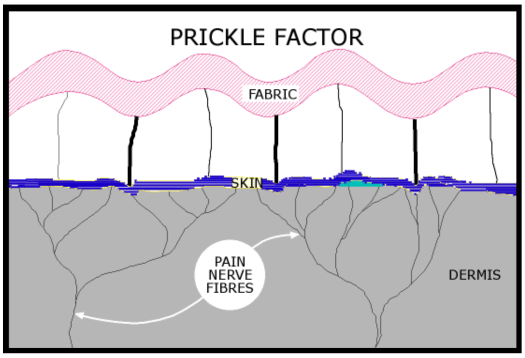
Personally I would sooner have the fineness than worry about the lightness and warmth. The Superfine end of the fibre trade is not used in blankets or duvets/doona and to me is not an issue

The most important thing to me is the handle of alpaca.

#3 ALPACA IS PRICKLE FREE!

PRICKLE FACTOR (%AE30)

"Comfort factor"



This is a term given to the perceived sensations from contact of clothing with the skin. The main sensation is the itch or prickles that some (few) people identify as giving discomfort. Research suggests that the itch is not an allergy but a response from the pain nerve receptors in the skin to the coarse fibres (over 30 micron) protruding from yarn in the fabric.

The coarse fibres being the high load supporting fibres that protrude from the fabric exert a force of 100mg or greater. This indents the skin subsequently activating the pain receptors in the dermis. The finer more flexible fibres do not create the same problem. It is a prickle or itch that is perceived and not a pain.

The offending fibres (Natural or Synthetic) are usually over 30 microns in diameter in particular are those over 40 microns.

Yarn with a high content of coarse medullated or Guardhair fibre will produce a much greater discomfort to the wearer. It therefore is wise to be aware of the measurement on the histogram indicating the percentage of fibres over 30 microns (Greater than 5%).

Alpaca fibre, at 5% over 30µ, averages around 21.5 microns (subject to fibre variance "CofV" in the fleece). Little difference between Huacaya and Suri fibre could be found for this characteristic. (Holt/Scott 1998)

Studies have shown that sheep's wool of an average diameter of 21 microns and a low C.O.V. having less than 5% of fibre over 30 microns should not be perceived as having a prickle (itch) problem.

Prickle factor is now being quoted as "comfort factor" and is shown in reverse to that of prickle factor, EG PF 5.16, would now read CF 94.84. The research being quoted in this article was done when the term "prickle factor" was in use.

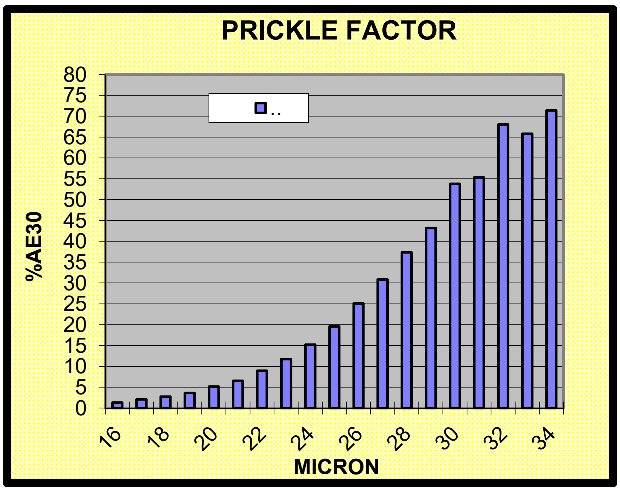
Research by Dolling etal (1992) was for an evaluation of prickliness in woollen fabrics. Similar fleeces (for mean fibre diameter, S.D. staple length and strength) were processed together to make knitted fabrics. One fabric had a mean diameter of 23.2 microns C.O.V. of 16.4%, the other a diameter of 21.5 microns and C.O.V. 21.7%. When assessed the 23.2 micron was perceived as being less prickly. When looking at the % of fibres greater than 30 microns the 16.4% C.O.V. had 3.6% above compared to 5.0%.

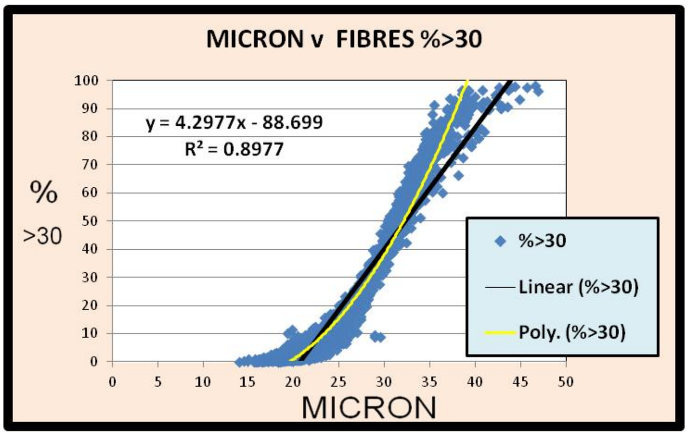
When spinning yarns at high speeds (Sporle, P 1994) the broad micron fibres tend to be thrown to the outside of the yarn. He has indicated to the writer that using less twist (soft twist) he can reduce the prickle effect. If there is an extreme coarse edge in the fibre then the problem will still remain. Mr Sporle says that using a soft twist on fibres up to 28 microns and a C.O.V. of up to 22 he can create a yarn that is comfortable on the skin.

Woven fabrics with their tighter construction (similar micron) will tend to be pricklier than the knitted fabrics. The fibre ends are not as rigid in the knitted fabrics.

Fibre length also plays a role in the "prickle factor". The longer the average fibre length the less fibre ends should protrude therefore the less the prickle factor.

So when using measurement data in selection you should take note of % number of fibres over 30 microns, as well as C.O.V. Of course as the micron gets stronger so the % over 30 microns will become greater in number.





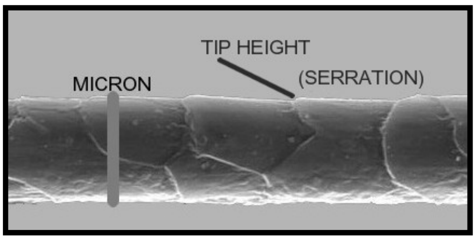
Keep your eye on the C.O.V. and coarse edge micron, you can keep it at its lowest level.
<u>BREED OUT GUARD HAIR</u>

<u>*AUTHORS COMMENT*</u>

HANDLE AND SOFTNESS

<u>This characteristic in my opinion is the main assets of Alpaca fibre (Author).</u>

The softness is usually due to the micron of the fibre but when comparing Alpaca with wool we have a major difference. The cuticle cells (outer) on wool protrude approximately 0.8 of a micron (scale height) compared to Alpaca that protrudes approx. 0.4 – 0.3 of a micron (suri less). **This gives a feel of around 2/3 microns finer (softer) than the equivalent micron in wool.**



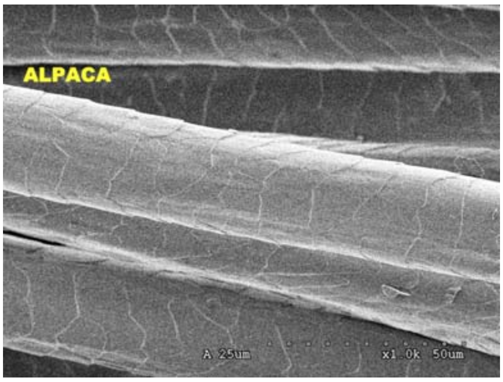
With some lustrous Huacaya fibre and Suri fibre you can get also a more slippery feel due to the scale frequency per 100 microns being lower. These characteristics are advantageous to Alpaca not only from the softness angle but also from the ability to wear Alpaca fibre on the skin. You would assume that the prickle factor which applies to wool with 5% of fibres over 30 microns may not be as severe on the equivalent Alpaca fibre, although if the yarn has a lot of coarse fibres through it this may not be the case. Coarse fibre ends touching the skin triggering pain receptors just below the epidermis layer cause the prickle factor.

During the year (2017) the author read an article written by Meyla Bianco Johnston in "Alpaca Culture". regarding substitution of wool into a product labelled Alpaca.
Press releases indicated "alpaca" being mislabelled (blended with wool or other fibres) that is, not identified in the correct content on the labelling. I heard of it back in the 1960'. Superfine wool was sometimes substituted with cashmere. The superfine wool being cheaper than the cashmere and it is difficult to detect the difference between these protein fibres once the fibres are blended and spun. Blending is widely used during textile manufacture and it is not illegal, but undisclosed substitution is.

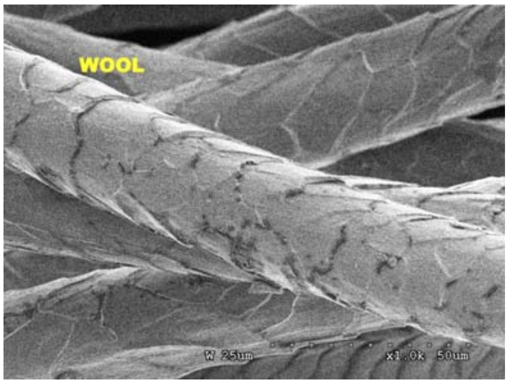
The author carried out a research trial to prove the correctness of previous studies and a confirmation of identification of solid alpaca fibre (<20μ) being wrongly identified as wool.

ALPACA & WOOL SCALE HEIGHT ESTIMATED MEASUREMENT IN SELECTED GROUPS

MIC range	MIC AVE	ALPACA μ	WOOL μ
13/17	15 μ	0.36	0.79
18/22	20 μ	0.35	0.78
23/26	25 μ	0.43	0.92
27/31	30 μ	0.30	1.27



In these two microscope photos of 25μ fibres taken of "Alpaca and the Wool", the differentiation can be seen very clearly in the scale height between the two slides.

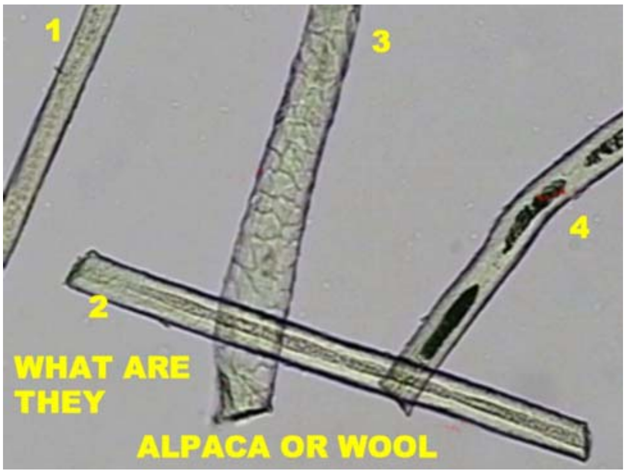


The Alpaca scale did not noticeably protrude from the shaft of the fibre.

<u>**The Wool scale protruded approximately twice that of the Alpaca**</u>

Scales per 100µ for micron in this 25µ group were around 8 for both Alpaca and Wool in this study.
Findings confirm results of Tillman/Davit (2006)

By the way, WHAT ARE THESE FIBRES?*Answer at the end*

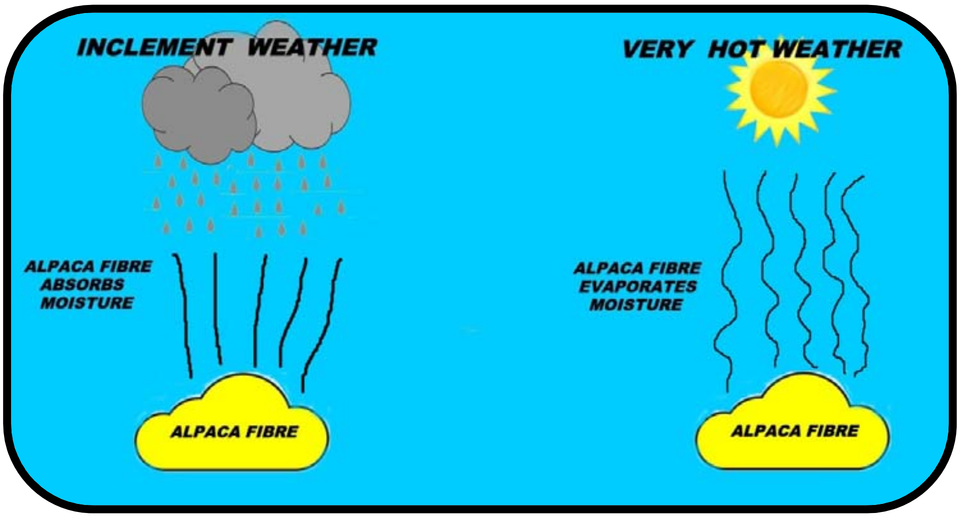


<u>I believe there is no doubt that the lower scale height of alpaca greatly enhances the handle (softness) of alpaca fibre when compared to wool.</u>

#4 ALPACA DOES NOT RETAIN WATER!

HYGROSCOPIC PROPERTIES

This is simply moisture absorbency. Alpaca, like wool, has the ability to absorb and give off moisture. An example is under very humid conditions alpaca can absorb up to around 30 per cent of its own dry weight before the wearer feels any clamminess from the garment. *Scoured Alpaca fibre when in a controlled laboratory absorbs 15% moisture from a bone dry weight of fibre (Holt/Scott 1995).*



"This discussion takes me back to my days as a Wool broker";

Before the introduction of fibre measurement (early 1970s), the Australian wool industry sold its fibre on greasy fleece weight and visual assessment taken at the time of arrival into the wool brokers store. At sale time, bales would be lined up and visually assessed by the wool buyer for fineness, evenness, length and yield (percent of clean fleece weight).

It was not unusual for wool which had been shorn in a district during inclement weather to be re- weighed for fleece weight when the auction (sale) of the fibre took place in very hot weather. The re- weighed bale weights were usually lower than the weight originally taken when the bales came into the wool broker's store **(not all re weighing of wool achieved the goal of the buyer, that being, getting a lower greasy fleece weight)**.

With the introduction of selling the merino wool by scientific (objective) measurement meant not only a change in presentation of the fibre for inspection, but the bales were not weighed until they were sampled just prior to the sale.

At the time of weighing, "Testing samples" were taken from all bales and were sent back to a registered wool testing laboratory, e.g. Australian Wool Testing Authority, where a standard atmospherically controlled laboratory *(Humidity 65% {+-2%} and temperature 20 degrees C {+-2degrees})* measured and calculated not only the micron, C of V and clean fleece yield, but in the case of the merino in later years also the length and soundness. This meant that no matter when the wool was shorn, the absorbency or evaporation of the atmospheric conditions did not have an effect on the result.

Polyesters and acrylics can only absorb 1 or 2 per cent of moisture before feeling wet.
Polyester is therefore said not to absorb moisture.

#5 ALPACA IS SEVEN TIMES STRONGER THAN SHEEPS WOOL!

ALPACA IS THREE TIMES THE STRENGTH OF THE EQUALIVENT DIAMETER OF WOOL

Many Alpaca breeders claim that alpaca fibre is 3-7 times stronger than wool which is rather hard to believe given the similarity of morphology of the two fibres. Two colleagues of the author at the Textile and Fibre Research Institute (TFRI) based at the Melbourne Institute of Textiles, Drs Ian Stapleton and Robert Stedman, both did literature searches (1992, 2002) for documented evidence supporting this claim. Although many people write about it and attribute data results to various people, the original source could not be found. Romano Favari, former processor and current fabric designer and maker, has not seen any indication to support the claim that Alpaca is 3-7 times stronger than wool, during his time working with Alpaca fibre.

STAPLE STRENGTH

Alpaca is generally strong in tensile strength although this can change and become weak if the animal is stressed e.g sickness, lack of nutrition etc. Research (Holt Stapleton 1993) has shown Australian Alpacas (Huacaya) have a tensile strength range of 22-104 N/KTex. Research on Suris samples, (from two farms) was of good to average quality (Holt/Scott 1997), found the tensile strength range was from 18.25 to 57.50 N/KTex. Pasture was variable between farms and in their backlines; the fleece was quite tender due to the openness to the weather. Removing the backline tests improved the results by an average of 3.52 N/KTex.

With the introduction of new modern machines and improved processing techniques 45N/Ktex is now considered the minimum strength for sound wool. Note; a break in the centre of the staple is more heavily penalised for price by the fibre buyers.

A report for the Rural Industries Research and Development Corporation by Professor Xungai Wang (2003), reported the following <u>from samples taken from a bale of Alpaca;</u>

"The tenacity of single alpaca fibre has a tendency to decrease as their diameter increases. ......As expected, single Australian alpaca fibre is stronger (about 7% higher on average) than a single wool fibre. However, the strength difference in single fibres is much lower than in staple strength. Alpaca staple strength is significantly higher (about 40% higher) than the wool staple strength".

However the data above does show alpaca to have a greater tensile strength than wool even if it's only a very small advantage. Fibres only need to be around 45 N/KTex and better for processing. Anecdotal evidence suggests that alpacas which have been tested from marginal pastoral zones where sheep are plentiful, tenderness in the alpaca fleece was not that dissimilar to Merino sheep.

To be accurate, <u>various breeds of animal, e.g. sheep, goats and alpacas of similar microns and ages would need to be shorn and run together under the same conditions for two to three years with yearly assessments of their fleeces, to be able to justify any such statements.</u> It is well known that nutrition, health, pregnancy etc affects the tensile strength of these protein fibres.

There needs to be more convincing data for the original claim that alpaca fibre is 3-7 times stronger than wool to be believed.

Answer...undecided, more accurate evidence needed

#6 ALPACA IS MORE DURABLE THAN SHEEPS WOOL!

Alpaca is considered to be a durable fibre similar to that of wool (relevant to similar microns). **However Professor Wang (2005) suggests that Alpaca may in fact be more durable, when examining bending / abrasion fatigue on Alpaca and Wool;**

"The results indicate that the number of abrasion / bending cycles at fibre break increases with an increase in fibre diameter, and that alpaca fibres are more abrasion resistant than wool of similar diameter. One reason for this is that the alpaca fibres have a much lower scale thickness (or much smoother surface) than the wool fibres".

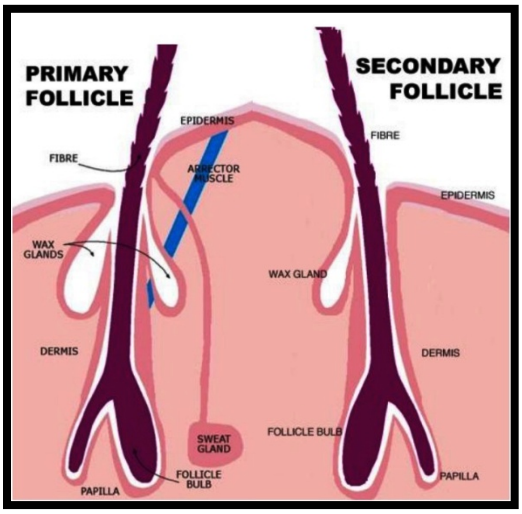
As the fibre becomes coarser it becomes harsher and although the fibres become more durable per sae they are not as desirable to wear close to the skin.

To gain a better understanding of the attributes, important knowledge of alpaca fibre and its fibre preparation for sale, I recommend my book "A Definitive Guide To Alpaca Fibre" for your reading.

#7 People are not allergic to alpaca due to no lanolin / grease.

Alpaca does not have lanolin in the fleece

The second statement is completely wrong!



Alpaca fibre like other fibre producing animals has certain forms of what we would call contamination. These are,
- What they collect in the field while grazing such as dirt and vegetable matter
- And those internal contaminants found within the skin. Those contaminants are grease, also known as lanolin which is found in the sebaceous gland (wax) and the suint which is found in the sudoriferous gland (sweat).

As you can see in the two follicle examples, both have wax glands.

The grease is a clear substance and not only helps the fibre travel through the skin as it grows but also helps protect the fibre from external elements. Alpaca (Huacaya and Suri) are normally low in grease but can in some cases can have a higher content. This is dependent on the bloodline and breeding just as other fibre animals' content can vary for the same reasons.

AN AVERAGE ESTIMATE OF INTERNAL IMPURITES PERCENTAGEFOR HUACAYA FLEECE (C Holt / S Scott / I Stapleton -1992)

GREASE	SUINT
1 - 3%	0.5 - 1%

I have seen angora goats with mohair containing very high contents of grease up around 40 per cent as well as some Suris with content between 10 and 20 per cent. This data is not commonly seen. Some Huacaya alpacas have been seen by me with an estimated 5 to 8 per cent of grease. Some grease is important in our alpaca fibre.

The low content of grease and suint obviously is an advantage in the scouring process but of course the dust and vegetable content which is picked up whilst grazing is a husbandry responsibility of the grower and is also dependent on the pastoral zone in which the alpacas are grazed.

I will make a bold statement and go as far as saying that all alpaca fibre processed either on mini mill machinery or on full commercial processing plants have the wool scoured prior to processing. Back in the early 1990s when there was some thought that alpaca due to its low grease content could be processed without scouring; I engaged the help of the textile department of my Institute to help me carry out a study into this. I will not say the result was a disaster but the cost involved was prohibitive and the recommendation from that experiment was a definite NO. However I will say that the problem came more from the dust than it did from the actual grease.

The only people who I would think would spin greasy alpaca would be the craft industry where they can select fibre free of dust and vegetable matter and use the natural grease as an aid to the cohesion in their spinning.

As to the first statement.

As discussed in prickle (Comfort) factor, itchiness or perceived allergy is created by the coarseness of the fibre (%fibres over 30 microns) and in the majority of cases where wearers of the fibre believe they are affected by the wool grease, it is very clear that in processed fibre which has been scoured, there is no wool grease left for this comment to be made. I would go so far as to say that the wearer of alpaca would have a similar reaction to the wearer of Merino sheep's wool. One reason may be a medical condition, which would be rare. There is other possible influence and that may be the cuticle cell height which is discussed in this article under Handle.

So my comments to this myth "Find me some hard evidence that confirms the first statement and as to the second statement I believe is FALSE"

#8 ALPACA RESISTS SOLAR RADIATION!

The major factor responsible for tip damage is solar UV radiation, (L Holt 1993).

Weather damage on wool tips causes losses in carding and combing due to fibre breakage and problems for the dyer caused by uneven uptakes of dye along the fibre length.

The major factor responsible for weather damage is solar UV radiation. The end result of prolonged exposure to sunlight and other environmental factors is the loss of cuticle followed by rapid degradation of the cortex. These events then result in a significant loss of fibre strength in the tip region.

A simple staining test which allows the extent and severity of tip damage to be readily assessed has been developed at the Textile and Fibre Research Institute (TFRI) based at the Melbourne Institute of Textiles. Greater amounts of dye are taken up by the more weather damaged fibres.

The following data shows the relative extent of tip damage in all fleece sites for the total sample. This table is a summary of data relating to tip damage detailed in "A SURVEY OF ALPACA FLEECE CHARACTERISTICS" (Holt C/Stapleton I 1993).
The data is collated (Holt L 1993) according to groups and the numbers in the Table indicate the amount of dye taken up by weather-damaged tips.

SUMMARY OF WEATHERING DAMAGE MEASUREMENTS

		Sites							
Groups		P	SP	S	M	B	N	A	MB
A	Range	38-104	49-109	34-85	20-73	51-114	34-59	16-32	228-538
	Median	80	77	60	53	82	47	27	253
B	Range	65-296	81-147	37-208	54-101	67-145	81-94	22-44	258-438
	Median	99	106	78	70	68	68	33	340
C	Range	62-179	95-131	52-114	57-138	71-229	35-90	13-23	138-604
	Median	90	109	69	70	123	67	17	276

The overwhelming conclusion from the above results is that the mid-back site is severely weather-damaged compared to the rest of the fleece. We have not been able to determine how far down the flank of the animal this degradation extends. It would be reasonable to speculate that Peruvian fleece, grown in the Altiplano region of Peru would suffer significantly higher levels of tip degradation because of the greater levels of UV at high altitude.

#9 BLUE EYED WHITES ARE NOT DEAF!

This was one of the first myths to be proved false.

In 1992 whilst visiting leading alpaca breeders, Alan and Carolyn Jinks at their property in Victoria, Australia, to conduct a training program I took the opportunity to walk through their base herd of alpacas with Alan. We noticed a white alpaca which appeared unaware when we were walking close to her. She did not move generally and on inspection found that she was a blue eyed white. Using some attention techniques like clapping hands and noise, Alan and I made the decision that she was deaf. This was my first encounter with the blue eyed white syndrome which has also been found in mohair goats.

Discussing this at the time with many people, the consensus was still that blue eyed whites were not deaf. I know deafness has been found in the goats and it seemed feasible that this was happening with our alpacas. It wasn't until research finally proved that in a majority of blue eyed white alpacas, most of them were in fact deaf.

Anecdotal evidence, research evidence from Elizabeth Paul (Australia) and a study by D Anderson and P March (2002 USA), where they conclude that "Congenital deafness" is prevalent in alpacas with a white hair coat and solid blue eye colour (approximately 90% of animals with solid white hair coats and solid sky-blue to white eyes are deaf)".

This data strongly suggests that true blue eyed whites have close links with congenital deafness.
(Those alpaca breeders of "grey fibre" should read Elizabeth Pauls book "The Alpaca Colour Key")

ANSWERS to the microscopic fibre photo

1 Alpaca ; 2 Alpaca; 3 Wool; 4 Alpaca

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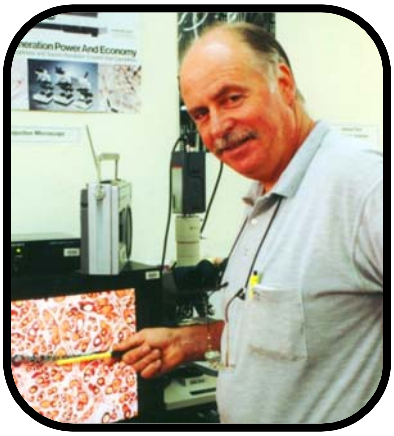
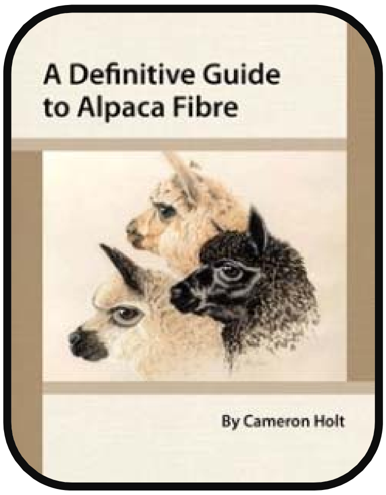


Cameron Holt, *a leading international alpaca fibre expert has had some 50 years in the fibre industry with 25 of those later years dedicated to alpaca research and education.*

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. His numerous research programs and publications over these years helped enable this book to be written.



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