



ALPACAS AUSTRALIA

The official publication of the Australian Alpaca Association Ltd



In this issue:

- Educating Spinners
- Inside Michell Peru
- Alpaca Haltering



SOUTH AUSTRALIA CHAMPIONS AUSTRALIA'S ALPACA



ADELAIDE's Globe Derby Park will be the home of the 2016 Australian Alpaca National Show & Sale (NS&S).

Scheduled for August 4-7, it will attract around 600 of the finest Australia alpaca, with breeders large and small arriving from around Australia and the world to show, buy and sell premium live alpaca.

The NS&S is the annual benchmark identifying the best alpaca in Australia. With 170,000 registered animals in the national herd, Australia is a key player in the growing alpaca market, and the event attracts international custom and interest. Judging this year are the highly-respected Natasha Clark, Lyn Dickson and Peter Kennedy, with Judge Kennedy commenting "It is a great honour to judge the best alpacas from all around Australia in this show, which is so recognised around the world for the depth of quality in the stock exhibited".

Association President Michelle Malt said South Australia was the clear choice for 2016. "It's about quality and inspiration", she said. "Adelaide offers outstanding accessibility and facilities, and S.A. is home to some key leaders in our industry."

South Australian AAA President Perry Wheeler said that his regional team had staged a number of previous national industry events, and was delighted with their 2016 appointment. "We're all straight into it, all working very hard. We've got a really exciting, well-resourced and accessible venue in historic Globe Derby Park just 20 minutes north of the CBD, and an action-packed calendar", he said.

Australian Alpaca National Show & Sales see fine Australian livestock sell to faraway destinations including the Netherlands, where 2014's Champion Senior Male Huacaya Alpha Centauri Kommissar now resides. Here, Andrew Munn of Alpha Centauri Alpacas, top left, celebrates the sale for export of Alpha Centauri Kommissar to breeders from the Netherlands, Dries Luitjen of Quality Line Alpaca (centre) and Woulter Coenradie of the Alpaca Garden Stud at the 2014 Australian Alpaca National Show & Sale.

Image courtesy green, green grass communications.

The participation of the entire Australian alpaca industry is welcomed. Contact nss@prados.com.au for more information about sponsorship, competing in the showing, or securing a trade stand at the event. Breeders Choice Auction enquiries can be directed to shorty@alpacaschaparral.com. Entry to the event is free to all, with events planned all day every day from August 4 until 7 inclusive.

For further details, visit nationalshow.com.au or like Australian Alpaca Association on Facebook.

2016 AUSTRALIAN ALPACA NATIONAL SHOW & SALE

WHERE: Globe Derby Park, Adelaide, S.A.
WHEN: Thursday August 4th to Sunday August 7th, 2016
CONTACTS: Convenor Sarah Wheeler nss@prados.com.au
Auction Mark Short shorty@alpacaschaparral.com
KEY DATES: 24 March Auction applications close
9 June Earlybird show entries close
28 April 2016 Auction selection announcements
5 May 2016 Event schedule released
23 June 2016 Auction catalogue preview online

MORE: alpaca.asn.au
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Cover: Alpaca Fleece - Skirting Workshop
Photograph courtesy of Nelly le Compte

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EDUCATING SPINNERS

How to select a good fleece for your project

By Angela Betheras - Nickelby Alpacas

In 2015 it would seem one of our favourite pastimes is interacting with our friends, known or unknown, on Facebook and feeling the love by being part of one of the many “groups”.

I am no exception to this and as a fibre fanatic/textile artist who makes her living by selling alpaca clothing, I justify being part of these groups as “growing my business” and happily while away the hours which should have me standing at the loom or sitting at the spinning wheel or at my design table, but such is life.

As an alpaca fibre lover and one who doesn't use any other fibre, I was becoming more and more distressed whilst on social media and interacting with spinning and knitting groups. Yes, my frustration was growing with the fact that there was just so much free alpaca fleece in the market and then when processed it was being sold for next to nothing because they did it merely for the love of the craft and after all why not, they received the fleece for free in the first place! However my real frustration stemmed from the fact that what they were being gifted and in some cases purchasing, was nothing more than garden mulch!

Post after post, images were being put up by excited spinners showing the alpaca fleece they had just managed to secure and

they were so excited. They couldn't wait to start spinning it, and please could someone tell them how to wash it, does it need to be scoured? Is it easy to dye? Will they spin and then wash or wash and then spin? The questions were and still are, endless. All for a bag of guard hair.

I would type a response and more often than not I would delete before pushing the post button thinking that there are far more knowledgeable alpaca breeders on here, I will leave it to them to comment. I suspect they were thinking the same. How do you burst someone's bubble who you can tell just by reading their post that they are so excited.

Jump ahead a couple of days and they have taken all the advice from others on the site of which some was good, some was questionable, and some was just blindly ridiculous, but it was not for me to judge as I remind myself I didn't comment. However at this point I wished I had because that very excited individual has now turned out to be a spokesperson against all the wonderful attributes of alpaca. They would not believe you if you told them the mantra that it is “softer and lighter and warmer than wool and doesn't prickle”, they would laugh in your face and jump straight back to their trusty scratchy Border Leicester and could you blame them when you see the photo of their alpaca spinning, which can only be described as nothing more than rope with hairs protruding everywhere.

Well enough was enough. I can only stay quiet for a short while. I thought here I am trying to make a living selling alpaca garments in my farm gate shop five days a week, back in 2011 I won the RIRDC VIC Rural Woman of the Year based on my working with alpaca, I talk alpaca to hundreds of tourists every year, I can no longer sit back and let this continue.

So one day with very little thought, probably after a couple of wines, and a comment on line by Robyn Betts that as breeders we should make sure we only sell well presented fleece. I put it out there on that Facebook page that I was considering running two free fibre days where you could come along and learn "the good, the bad, the ugly and the beautiful" when it comes to alpaca fleece. The marketing pitch was that you would learn how to select a good fleece for your end project right through to how best to spin it and all the steps in between to give you confidence to work with alpaca and see why it is known as such a special fibre. Bring your lunch, your spinning wheel if you had one and a gold coin donation for the urn.

The response was overwhelming and thankfully Lezley Golding from Stevley Park Alpacas, Daphne Gregory from Chiverton Alpacas and Heather Scott from Surinti Alpacas also responded saying they would love to help in any way they can. Thank goodness this is a lovely friendly industry because I realised with the responses I was receiving I had bitten off way more than I had expected and was quickly going into panic mode, especially because I don't breed or work with Suri!

So it was set, we decided to run two days; a Friday and then the Saturday based on the feedback we were receiving. Lezley, Daphne and I met to discuss the format and we lined up a friend Barb from Back to Back Crafts who has won many awards with her very fine alpaca spinning to run the spinning segment of the day.

We put together a program that flowed from the time the alpaca was shorn right through to the finished spun yarn. We wanted to highlight all the stages and give them the confidence to be able to receive an alpaca fleece and confidently turn it into wonderful yarn that these people were capable of doing.



So we decided to show what part of the fleece was used for what, we showed how a fleece should be bagged when shorn and specifically in the case of Hyacaya, having the saddle separate and if they open the bag and it is all in together then tread very carefully. We discussed histograms and how the comfort factor is probably the most important consideration for the average spinner. They were all to be able to feel a range of fibres showcasing the good, the bad, the ugly and the beautiful. We felt that this was important because to the uneducated, all alpaca feels softer than the majority of wool. We planned to show how to skirt a fleece and recognise the guard hair, how to ideally wash an alpaca fleece and how easily they felt in the wash. Our tips for drying a fleece to ensure it is easy to card and then finally tips on how to spin. The days were to start at 10.30am and finish around 4pm.

We knew that the Saturday was going to be busier than the Friday which we thought was ok as it gave us a day to settle the format and fix any timing issues. The day arrived, along with the sunshine and the fun and learning began.

Over the two days we had over 30 people attend as well as the organisers, some even travelled 3.5 – 4 hours to get to us. We decided to run it in October to ensure we were going to be offering tips for this year's shearing season but unfortunately the timing wasn't good for those studying for exams (there are a number of younger spinners these days, it is very trendy) so there were many requests to run it again early in 2016.

At the end of the two days we were certainly exhausted as they were quite demanding days mentally with questions coming flying at 100 miles per hour so thank goodness there were 4 of us there to answer the questions. We also had fleeces there for sale. One lady brought along some fleeces she was gifted as she had planned to find out if they were any good. By the end of the day

she could answer her own question and the state of the fleeces did give us all a good laugh. No longer was she going to try and get the twigs, grit and burrs out of her bags of predominately guard hair which she seriously was going to do because the person who gave it to her told her that when she brought the animal 5 years ago the breeder said it was a show fleece! Unfortunately she realised that the bin was the best place for this fleece and she happily purchased a beautiful fleece from Daphne and was once again excited.

As a follow on from the day the four of us tentatively went back onto that Facebook page and were pleasantly surprised as the comments and images were still coming through as of course not all 3000 + members attended our day, but what was pleasing was that those who did attend were giving advice, correct advice. They were making comments along the lines of "just went to a workshop and learnt that what you have been given is not worth using" or "there is no crimp and it has a hook top so it is obviously guard hair, would make great garden mulch" and "I got to handle some really lovely alpaca on the weekend, there isn't anything as soft I promise you".

Whilst we would all love to sit back and say our work here is done, we know that nothing could be further from the truth. Social media is powerful. It can grow a business faster than you have ever seen but it can also kill a business/industry quicker than you could imagine and this one page alone that we all belong to, has over 3000 members and it is only one of hundreds around the world.

Because of this we would love to encourage other breeders to think about organising similar days in order to ensure the facts are beating the fiction. Every day more and more under 20 year olds, some as young as 4 or 5 are taking up spinning and other textile pursuits so we want them to believe in the magic of alpaca and convert them early.

Our team of four are happy to talk to anyone who would like to run such a day and send you a copy of our running sheets and talk further on how we structured the day. We all agreed that we would be happy to fly anywhere in the country and run them for you (she says tongue in cheek) but alas it turns out our group here are going to keep us busy as we are under pressure to run more days and now they want to learn the tricks of dyeing alpaca. We might have to charge for that one!



Workshops for new breeders.

The Program.

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Learn how to trim toe-nails, give vaccinations, drench, body condition scoring, weigh and shear your alpaca. Matings, spit-offs, birthing, new cria care. Train alpacas to walk on a lead.

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Saturday and Sunday lunch, Saturday night dinner, and workshop materials.

Bookings.

All details and booking forms are at www.flowerdalealpacas.net
Or phone Jen on 03 9728 7070.



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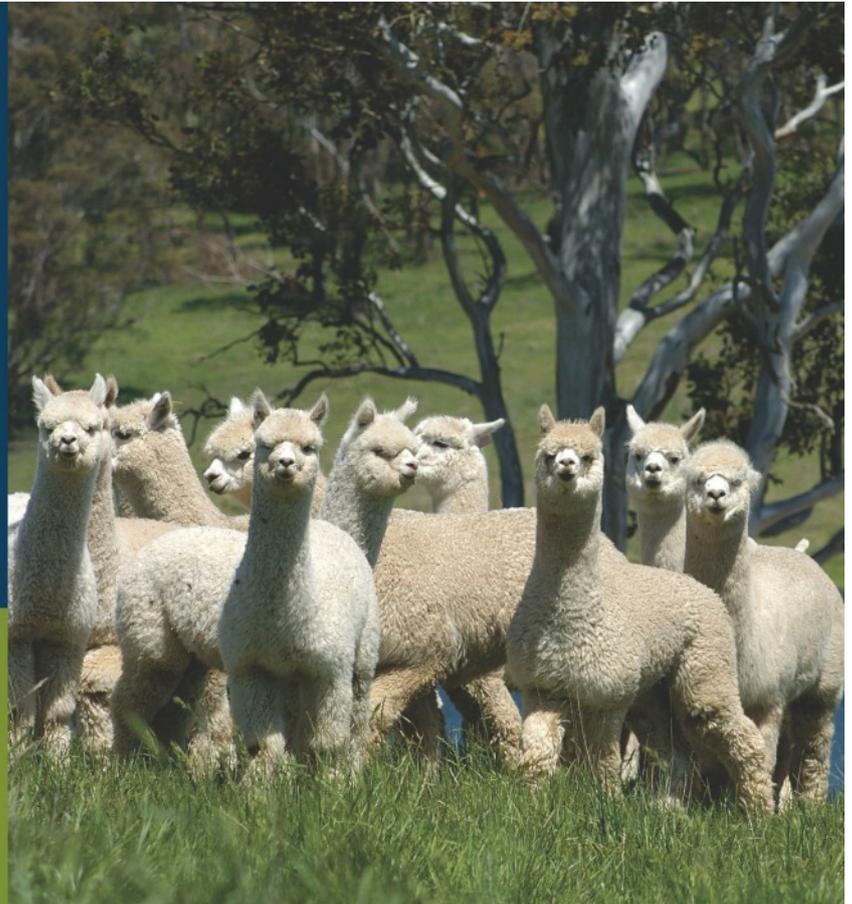
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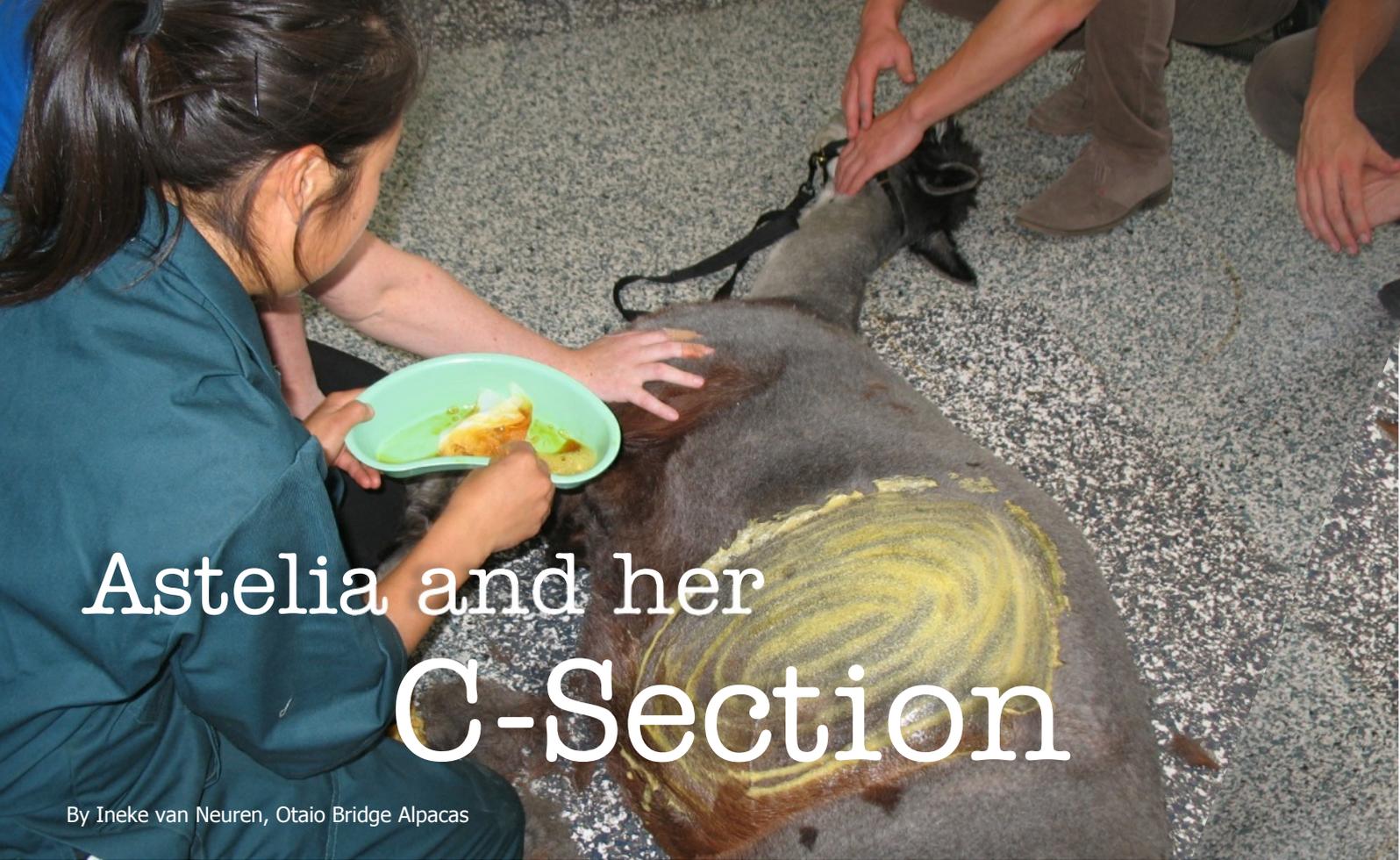
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Astelia and her C-Section

By Ineke van Neuren, Otaio Bridge Alpacas

We had been keeping a very close eye on our pregnant dam OTB Astelia for a few days. We were getting concerned as she was obviously restless and uncomfortable. On the Monday morning the discomfort slowly changed to distress, and we called the vet.

At first examination, with Astelia in crush everything appeared to be fine and the cria was ready to birth. Our vet Esther decided to go ahead and unpack it.

We were able to get Astelia to stand up to enable easier access, which is when Esther could feel that there was a twist in the uterus. After a quick call to the clinic it was decided to take her to the clinic and perform a C-section.

We put a halter on Astelia and she walked to the van. We had to help her in, but on arrival at the clinic she actually jumped out and walked into the surgery. (Halter training is so worth the time and effort!).

She was initially sedated with a triple mix, and then prepped for the operation starting by shaving a rectangle on her side. This area was injected with local anaesthetic and she was lifted on to the operating table. Astelia had two veterinarians, Esther and Dougal, in attendance and two vet nurses, while we stood nervously on the sidelines. The initial incision was made and after a bit of searching a cria leg was located, still safely in the uterus. With Dougal holding the leg, Esther made an incision into the

uterus. Within seconds Dougal found the head and lifted the cria out. We were surprised at how little time it all took. It was just so quick.

While the vets carried on with the slow job of stitching all the different layers we turned our attention to the cria – a 10kg+ girl! We placed her on top of her dam with the cria's tail under her dam's nose. We rubbed the cria all over her.

This was our second C-section. Our first (Erik, so named after the vet Erik van Schreven) ended up with Mum not accepting the cria. We were determined to try to prevent that this time.

As soon as the stitching was finished we were able to get the cria, now named Esther, to suckle from her mum.

As Astelia was starting to wake we carried her to the van, but once home she scrambled out herself before we could help her. We made sure the cria suckled frequently while Astelia was still partly sedated but when she was fully awake she would not let her feed. We found if we put her on a lead and fed her pellets she was distracted enough, and the cria confident enough, to sneak some quick drinks. We did supplement the cria with colostrum, first with a syringe and later with a bottle, just to make sure she was getting enough.

The placenta is not removed during C-section as the risk of damage to the uterus is too great. Astelia was given oxytocin after surgery and again after 24 hours. She was increasingly reluctant to let the cria feed. It took about 48 hours for the placenta to be delivered and after that life for both cria and dam became much easier. They haven't looked back.

We are very pleased they have bonded so well. We are not sure if everything we did made a difference, but maybe it did. We were very lucky Astelia is a very easy going alpaca and Esther was a quick learner.

We did discuss the possibility of untwisting the uterus but according to our vets they hardly ever attempt it now, with any species. They find it easier on Mum and baby to do the C-section, with much less internal damage.

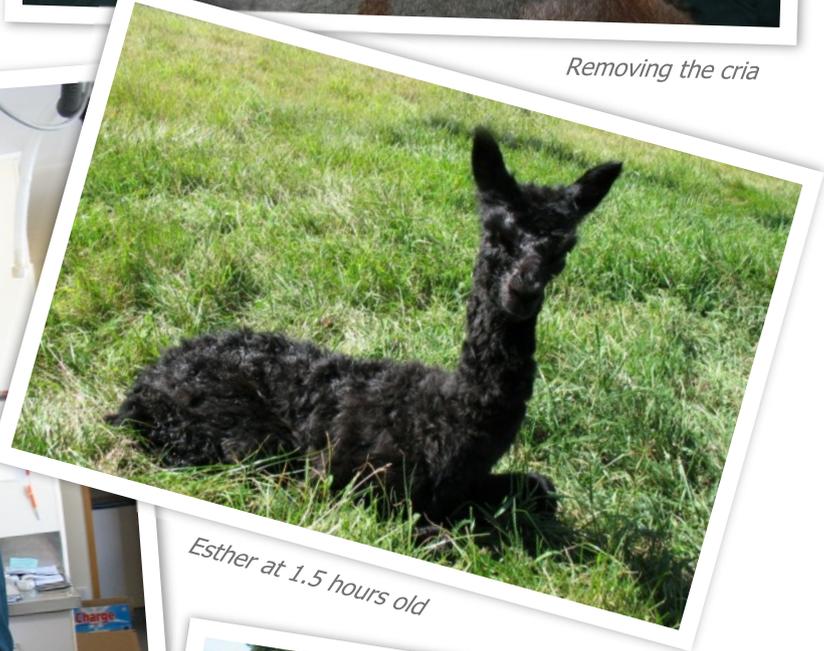
Thank you to Esther and Dougal of the Waimate Vet Services.

P.S. We are also happy to report that 4 months later both dam and cria are doing well. Astelia was happily remated 6 weeks post surgery. We are now looking forward to an uneventful birth.

Reprinted courtesy of the author & New Zealand Alpaca Magazine.



Removing the cria



Esther at 1.5 hours old



Stitching everything back in place



Astelia at home after the caesarian

PROJECT SUMMARY



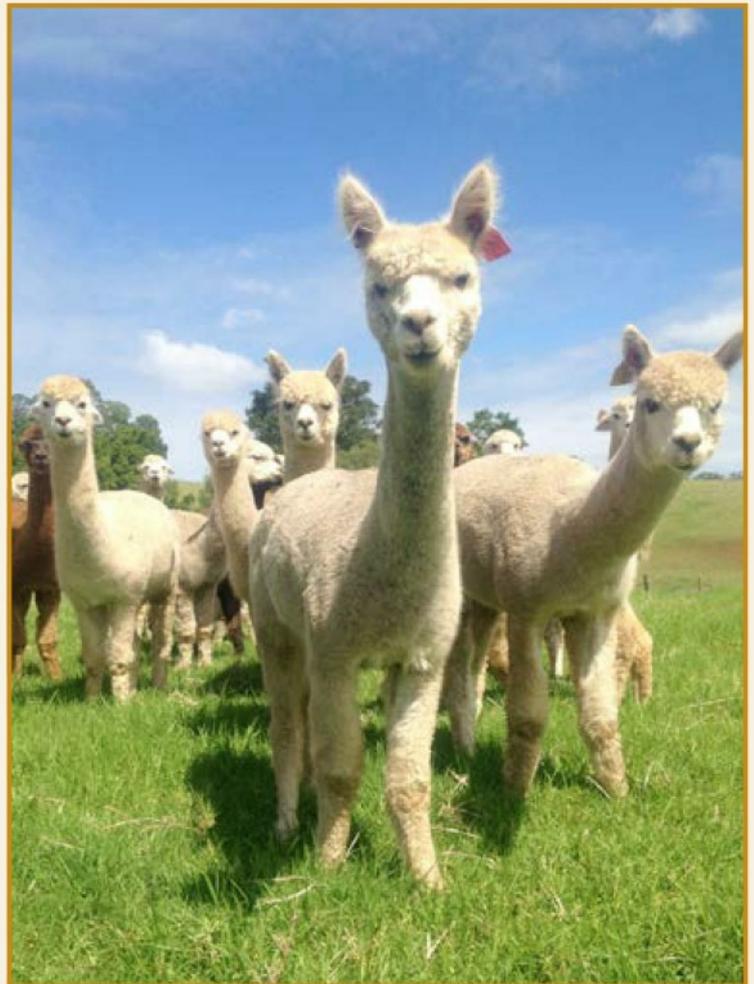
RURAL
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Factors impacting Australian alpaca meat and methods to improve quality

Background

The sustainable expansion of the Australian alpaca industry, predominantly a pasture based system, requires the development of a market for meat in addition to traditional fibre to improve commercial returns. Establishment of an alpaca meat industry will likely increase the demand for otherwise unprofitable animals and lead to genetic gains across the industry. For successful entrance into the competitive red meat market, it is important that key production traits common to red meat industries, such as beef and lamb, are taken into consideration to ensure the supply of a consistent quality product. However, there is a paucity of information on alpaca meat, especially in terms of carcass composition and yield, and the impact of gender and age on these traits.



Aims/objectives

The following aims/objectives align with the two experiments in this study:

1. To investigate the relationships between slaughter age (18, 24 and 36 months) and sex of alpacas under Australian conditions by comparing nutrient, carcass and sensory parameters associated with meat quality and furthermore investigate the benefits of value adding processing techniques such as electrical stimulation, on alpaca carcasses.
2. To compare carcasses from alpacas grazed under two different feeding systems (pasture only vs. pasture + supplementary feeding) to assess variation in overall carcass and meat quality parameters. In addition, tender stretching was applied as a carcass suspension method on a sub-set of carcasses to establish the effect of this value-adding technique.

Methods used

Experiment 1:

An investigation into the effects of slaughter age, gender and electrical stimulation, on alpaca carcass quality and sensory parameters.

Alpaca carcasses from 50 animals representing three different age groups (18, 24 and 36 months) and two gender groups (castrated males vs. female) were subject to the same nutrition, environment, and husbandry procedures for 4 months prior to slaughter and assessment for quality traits and yield. At slaughter carcasses were split down the vertebral column with one half electrically stimulated prior to chilling. After 24 hours in a cool room the cold dressed percentage was measured prior to removing samples from the *longissimus thoracis et lumborum* (loin) and *semimembranosus* muscles from the stimulated and non-stimulated halves of each carcass.

Analysis of meat quality and yield included nutritional meat quality parameters, and carcass parameters. Colour shelf life of alpaca meat was determined by taking a 2-3cm thick loin sample from each carcass and analysing colour stability over a period of simulated retail display. A full carcass breakdown was conducted to determine the overall volume, and type of useable meat cuts obtained. In addition, a tasting panel evaluated consumer acceptability.

Experiment 2:

Investigation into the meat quality parameters of electrically stimulated alpacas from two different feeding systems.

Fifty six 24 month old castrated male alpacas were randomly drafted into two groups and grazed on either 'improved pasture' or 'improved pasture + supplement' for 4 months prior to slaughter. Pasture samples were collected and analysed at study commencement and monthly intervals throughout the experiment. Once slaughtered, half the carcass was hung normally (at the hock) and the other half tenderstretched (hung by the pelvis). All carcasses were chilled for 24 hours prior to sample collection. Traits analysed included nutritional meat quality parameters, physical meat parameters, and carcass parameters similar to Experiment 1.

Statistical analysis for both experiments was undertaken using a range of statistical models.

Key findings

1. 24 month old castrated male alpacas are optimal for slaughter
2. Medium voltage electrical stimulation at processing helps to prevent cold shortening and improve tenderness
3. Tenderstretching alpaca carcasses improved tenderness in the *semimembranosus* muscle
4. Wet ageing of alpaca meat for 10 days improves tenderness and product consistency
5. Detailed knowledge is now known on alpaca meat quality parameters
6. Grain supplementation provided minimal carcass trait benefits.

Although valuable information has been gained from this project for alpaca producers and processors, there is scope to further improve the eating quality of alpaca meat. The lean nature of alpaca carcasses has implications with respect to chilling post slaughter which has a negative impact on tenderness. Also, processing techniques such as electrical stimulation and tenderstretching were found to have positive impacts on different parts of the carcass. These effects may be complimentary if both techniques are applied to the same carcass at processing.



Tenderstretched alpaca carcasses

Implications for relevant stakeholders:

Producers and processors now have information which will assist in predicting the carcass yield and meat quality traits of alpacas of differing sex (female and castrated male) at three age periods (18, 24 and 36 months). This information will be beneficial to the on-farm and processing aspects of the alpaca meat supply chain.

Recommendations

The alpaca meat industry has been provided with several recommendations and guidelines which can improve eating quality and consumer perception. These are:

1. The optimal slaughter age and gender for alpacas is 24 month old castrated male alpacas. These males exhibit a desirable balance between saleable meat yield and meat quality traits. This age group also links in with current industry practices where animals are classed for fibre traits.
2. Medium voltage electrical stimulation (i.e. 600 mA peak at 68 ms pulse interval and a 1000 μ s pulse width for 40 seconds) is recommended at processing to help prevent cold shortening of naturally lean alpaca carcasses, thus improving meat tenderness and overall consumer eating quality.
3. The application of tenderstretching on alpaca carcasses improved tenderness in the *semimembranosus muscle*, the largest muscles in the hindquarter, and may apply to other muscles in the hindquarter. This technique is recommended subject to further work.
4. Further investigation into the combined effect of applying medium voltage electrical stimulation and tender stretching of alpaca carcasses on carcass traits and meat quality characteristics is required.
5. Wet ageing of alpaca meat for 10 days is recommended to improve alpaca meat tenderness and product consistency.
6. Grain supplementation at 300g/head per day to animals on coastal pastures provided minimal benefit for carcass traits. However, providing a mixed grain ration as a finishing ration prior to slaughter requires further investigation, as well as investigating the impact of improved pastures and forage crops.



This research was conducted through the University of Sydney by PhD candidate Melanie Smith, with the support of the NSW DPI and funding from Illawarra Prime Alpaca and RIRDC..

Journal publications generated from this work:

Smith, M. A., Bush, R. D., Thomson, P. C., & Hopkins, D. L. (2015). Carcass traits and saleable meat yield of alpacas (Vicugna pacos) in Australia. *Meat Science*, 107(0), 1-11. doi:

<http://dx.doi.org/10.1016/j.meatsci.2015.04.003>

Smith, M. A., Bush, R. D., van de Ven, R. J., & Hopkins, D. L. (2016). Effect of electrical stimulation and ageing period on alpaca (Vicugna pacos) meat and eating quality. *Meat Science*, 111, 38-46. doi:

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A Look Inside Michell

By Meyla Blanco Johnston

Michell & Cia has been processing alpaca fiber for more than 83 years in Peru. Michell is the core company of the Michell Group, a vertically integrated group of companies involved in the alpaca business. The group takes alpaca fibre from classification to top making to yarn spinning to carpet and rug tufting to knitting and finally, retail luxury alpaca wear.

The cavernous fibre sorting area at Michell filled to the brim with raw fibre waiting to be sorted by hand. The amount of alpaca fibre being sorted here and stored at right boggles the senses.

Sorting, Scouring and Combing Factory Tour

When we first arrived on the international press tour to see the Michell alpaca textile factory, we were warmly welcomed by the owner of Michell, Derek Michell and his two teenage children as well as a robust staff, handlers and many friendly faces. We were divided into two groups; one Spanish speaking and one English speaking. Our group was led by Raul Rivera, the Marketing Manager at Michell & Cia. S.A.

Sorting

I remember the first time I saw a photo in a magazine of the Peruvian women sorting what seemed like an infinite pile of alpaca fibre. Transfixed by the idea that human hands could differentiate between fineness, I later learned that women who sort alpaca fiber learn to do so from their mothers, grandmothers, aunts and other female relatives – the skill is passed down through generations. Imagine my thrill to be standing in the very warehouse where the photo was taken!

Surrounding our international group was more alpaca fiber than most people will ever see in one place. The total annual alpaca wool clip in Peru is estimated to be about 6 million kilos of greasy (raw, uncleaned) fiber. In fact, in 2013, Michell bought 65% of the available alpaca fibre that year, called the clip.

This is the place it is sorted first by color and later by grade. Rivera explained the grades: Baby Alpaca measures an average of 21.5-22 microns. Fine Spinning (FS) grade is 25.5 – 6 microns. Huarizo is 30+ microns. Superbaby is just 19-20 microns and always white. In fact, the finest top produced at Michell is 19 micron. He noted that they do not get true black fiber very often anymore because, “Breeders in Peru focus more on breeding the natural white since the industry historically has paid more for white fibre.”

The fibre is blended with silk, wool, camel, tencel, bamboo, acrylics and other materials, natural and synthetic. Rivera noted that some customers, notably the Japanese, “prefer their fabric 100% natural.” So Michell takes care to keep their finger on the pulse of what the market demands. Increasingly, that is 100% natural, undyed yarn, material and garments.

In the last five years, Rivera noted, there has been more and more demand for Michell’s eco-line, which consists of naturally colored fibre. Since only 20% of the animals Michell sources from have colored fleece, this line has limited availability. From one alpaca fleece, Rivera explained, 8-10% is considered baby alpaca, 35-40% is Fine Spinning (FS) and the rest are short fibres. After the most valuable fiber is separated, the fibre is resorted. From this material, only the top 8-10% of that is Baby Alpaca, only 10% is Superbaby (19-20 microns).

Among concrete bays of alpaca fibre in various states of organization, the specifics of alpaca fibre itself was discussed. Soon, a member of the press asked about the role of crimp in terms of fibre processing. Rivera pointedly remarked, "Crimp is not important" in terms of how the material is processed.

In talking about how the finest fibre is produced, the conditions the animals themselves are raised in came up as a factor. Rivera noted that Puno, a city in southeastern Peru located on the shores of Lake Titicaca, is the best area for breeding alpacas because the weather is optimal. The animals live at high altitude and the temperature can change more than 20 degrees in 24 hours—no problem for heavily fleeced alpacas. This higher altitude results in finer fibre, Rivera says, and offers Peruvian breeders a leg up on other alpaca producing nations with lower elevation. Also, in the areas where Peruvian alpacas graze, there is plenty of low protein grass growing, another factor that produces fineness.

Peruvian alpaca fibre has less grease because of the low protein grass they consume here. The more nutritious the grass animals eat, the more lanolin is produced. So while the Puno grass is low in protein, it gets the alpacas enough of what they need and does not encourage a lot of grease production. In fact, production of more grease can be a drawback in countries with rich alpaca diets when it is time to scour the raw fibre.

Scouring and Drying

As we moved to the scouring area, Rivera mentioned that Michell uses detergents purchased from Switzerland and the United States to clean the alpaca fibre. They are 100% certified and entirely environmentally friendly— toxic chemicals are not used here. All the water heated for processing comes from Michell's own well and is only heated one or two degrees with a boiler so little fuel is used for heating water.

We walked single file on catwalks above huge vats of agitating water, bubbles and alpaca fibre. Because each batch of yarn being produced requires different temperatures and detergents, each scouring is a custom job.

There are a total of six massive, separate bowls to make sure all traces of dust, dirt and debris are removed. After drying, any soiled fibres that remain are removed and baled fibre is stored for later use.

Combing

At the opening station, the workers apply oil to the fibre to allow it to process more smoothly through the textile machines. Here, the last bits of dirt and dust that may be present are removed. Next the humidity of the fibre is altered if necessary to allow it to travel through machines more easily.

After this, the fibre goes to carding where colors are unified and short fibres are sorted. Gilling allows fibres to be further parallelized and combing is where the fibre is even more carefully organized,



Among seemingly endless bales of alpaca fiber, Marie Sanz of AFP News France speaks with Michell's Derek Michell during the international press tour. Members of the Colombian press team and others bring up the rear. Photo courtesy Mauricio Gil.

sometimes in multiple passes depending on what sort of end product yarn is desired by the client.

The British machines in the factory designed to parallelize the fibres were originally designed to process sheep's wool. In fact, wool from Bradford is much like Peruvian alpaca fibre in terms of processing. Here is where the process gets exciting to the observer: finished tops exit the machines like giant soft serve ice cream, creating perfect coils of beautiful, soft uniform fibre. These lengths are then coiled again into cardboard barrels. Full of promise and possibility, tops then go to the export or spinning departments to begin a new life as yarn or fabric.

According to Rivera, the Michell factory is the biggest plant in the world for processing alpaca. The factory has a capacity of 450 tons of fibre for making tops. 400 pounds of sliver (the material before tops is made) is made here per month on carding machines. Sliver can look like tops to the untrained eye. Rivera explains, "Sliver is the fibre obtained right after the carding process and it is presented in bumps of 8 to 10 kgs. It contains vegetable matter, neps and crossed fibres. Tops is the fibre obtained after carding, gilling and combing. The fibre is drawn parallel without neps and is almost free of vegetable matter or impurities (99%) and it is presented in bobbins of 8 to 14 kgs."

After carding, the fibre goes to gilling where it makes four separate passes to parallelize the yarn fibres to reach the high quality Michell demands. The gilling machines are made in France and Italy and have been customized by Michell for optimum use with alpaca fibre. After gilling, fibre goes to the roving frame. Interestingly, in this part of the factory, the company is forced to use older machines in some areas because newer machines go too fast to accommodate alpaca fibre.

Next comes combing, which aligns the fibre and makes it fluffy and light. Both Huacaya and Suri fibre is manufactured here at Michell. If you've ever handled Huacaya and Suri fibre you may have heard the different ways they are described. The inherent shininess present in both types of fibre is called luster for Suri and brightness for Huacaya. They also differ in terms of weight because Suri fibre is inherently heavier than Huacaya.

Such minute scientific measurements are assessed in the (mercifully) air conditioned, glassed-in room where the Optical Fibre Diameter Analyzer (OFDA) 100 and the brand new OFDA 4000 are housed. Here, workers measure the shortest and longest fibres from a given batch of alpaca as well as many other factors including fineness.

Some fibres must be processed in batches through the massive machines for maximum efficiency. This means like colors must be processed together as well as like fibres, for instance Huacaya of a certain grade and Suri of a certain fineness.

Rivera notes that it takes an entire day to clean between color runs. Machines are also adjusted significantly between Suri and Huacaya. So planning, organization and batching is critical. An average run yields 70% usable fibre with about 30% waste.

We left the sorting, scouring and combing tour with braided samples of alpaca tops sorted by natural color and arranged on a braided ring of dyed alpaca fibre.



After the alpaca fiber is washed and dried, it is rigorously examined for any stray debris, then baled for later use.



Sophisticated machines do today what took humans weeks to accomplish in the past. Fiber being processed into tops streaks by at top speed on the way to being coiled into barrels and sold or stored for future processing into yarn. Tops is the first material made in this factory and is itself a saleable commodity Michell regularly exports around the world.

Spinning Tour

A quick trip on the tour bus took us to the factory where tops are made into yarn. Tops look, to the untrained eye, like yarn on a giant scale, but do not have the same internal structure. Tops consist of clean, organized alpaca fibre ready to be spun into yarn. The tops we saw made at the sorting and scouring factory are taken from large scale down to the durable strands knitters and crocheters are familiar with through a series of processes.

We were shown around the spinning factory by Gonzalo Zúñiga Alvarez, Operations Manager, who was assisted by Jimena Borja. Twist is added to yarn here for durability and ease of use and the strands must be wound onto big cones for later use. As this happens, the Swiss splicing machine works at lightning fast speed to join yarn together for coning in one continuous piece.

There are two dye plants here; one for tops and one for hand dyeing the fancier yarns. The tops dyeing factory creates 150 tons per month, completing the process through radio frequency and heat and a color injection machine.

Hand painted dyes, typically small batches, create yarn in unique, custom colors. After dyeing, yarn is often steamed to make it more voluminous. Space dyeing is done by coloring sections or lengths of an intact batch of yarn in different colors.

Here, "There are no small customers and no big customers," Alvarez said by way of emphasizing Michell's accommodation of all their clients. Their philosophy is that as their customers grow, Michell

grows. Delivery time for jobs, from start to finish, is about four to six weeks.

If you can imagine a yarn, chances are it has been produced here and you can see it in the yarn sample books, laid out on a long table, with each specimen neatly catalogued in a plastic envelope. The kaleidoscopic variety on display here was exciting and dizzying at the same time.



Tops are transformed into yarn in the spinning plant and wound onto cones by a machine for export or use in garments. A factory technician tends the machine and sorts the finished yarn.

Yarns included very, very fine strands, the bulky styles popular now, slubbed yarn to create textured garments, chinet in complex multi-strand designs that create a hollow center, alpaca yarns blended with metallic strands, boucle with little nubs and more. Many young, inspiring designers in Peru are making use of the custom dyed yarn Michell produces, Alvarez pointed out. In fact, Michell develops more than 1,000 colors per month depending on trend and customer demand. 4,500 lots come out of the Michell spinning plants per month. The company can process 5-5,000 kilos per batch so they can accommodate large customers and boutique orders. Yarn is Michell's biggest export, which they ship to thirty-five countries.

Our trip to the Michell factories in Arequipa was very satisfying on a lot of levels. First, to see alpaca processed in immense volume was fascinating. It also made what we have been researching and looking at in books and online for years tactile. To see just how big the alpaca industry is in South America made us hopeful for the growth of the alpaca textile industry worldwide. It inspired ideas for Alpaca Culture, too, because we met a whole new group of allies and role models willing to share their experiences and knowledge. Here's to the future of alpaca processing!

SOURCES:

Personal interviews: Gonzalo Zúñiga Alvarez, Raul Rivera.

Alpaca Culture was selected by the Peruvian government to attend Alpaca Fiesta 2014 along with a handful of journalists from around the world. The article here comes from the March 2015 issue, which contains other articles that may be of interest to international readers. Read more about the Alpaca Fiesta and other tours of major alpaca fibre producers including features about Incalpac and Art Atlas. Discover multiple aspects of the alpaca industry in the United States and abroad by subscribing to Alpaca Culture magazine at www.AlpacaCulture.com. Now available digitally – don't wait for delivery via the post.

Photos by Jared Johnston unless otherwise noted

Graph by Alpaca Culture

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Journalists on the International Alpaca Fiesta Press Tour are dazzled by the array of fancy yarns produced by Michell. Left to right: Ia Fugiwara (Japan), Meyla Bianco Johnston (USA), Kosuke Nagamatsu (Japan). At back right, Ariel Crespo (Mexico) asks Gonzalo Zúñiga Alvarez (our Michell guide) a question as Victor Chesky (Australia) looks on. At right, Elizia Volkman (Great Britain).

Certificates Of Appreciation

Each Regional Committee can nominate one member from their Region each year for consideration by the Board. The nomination must be in writing and received at the AAA Office by 31st July. The AAA Board may award Certificates annually to any member outside of the Regional nominations.

Criteria to be considered but not limited to:

- Length of service for the member is to be 10 plus years.
- Member is to have held an Office or Leadership position over a number of years at a National and/or Regional level.
- Made a significant contribution to a successful AAA project.
- Has been actively involved in shows, regional activities/ workshops.
- Volunteered their services to assist the industry via working parties / panels/ committees.
- Written documents to support the industry's progress.
- Is committed to the long term viability and sustainability of the industry.
- Is a consistent supporter of AAA events / activities.

It is with great pleasure that the Board announce that the following members have been awarded Certificates of Appreciation for 2015 and the Board would like to thank the members for their contribution to the industry.



Fiona & Ian Vanderbeek - Birrong Suri Alpacas Board Nomination

Ian was an AAA Director from 2009 - 2012, serving as Vice President and Company Secretary throughout that period. He contributed to a revision of the AAA Constitution, and has a thorough knowledge of both the Constitution and Regulations, and the application of both. During this period he and Fiona were members of a working party reviewing the provision of DNA services, making recommendations that initiated improvements at the time. Ian has been Chief Steward of the National Show and assisted with the organisation of several of these events. Fiona has been the AAA representative/liaison with RIRDC for a number of years, maintaining regular communication between RIRDC and AAA, contributing to support from RIRDC in terms of funding for additional projects and sponsorship for the 2014 National Conference.

Fiona was the technical advisor for the publication of the Alpaca AgSkills and the author of AgGuide - A Practical Handbook - Farming Alpacas, both of which were published by the NSW Department of Primary Industries. She was also a reviewer of the Managing Alpacas in Australia handbook. Fiona and Ian hold private educational workshops for prospective alpaca owners. Fiona is the co-ordinator of the Suri Fibre Working group and a member of the Fibre Development Committee, and is one of the co-ordinators of the training material for the Pre-Classing workshops.

Fiona is an Industry Liaison Officer for the alpaca industry, completing the ILO training in February 2012. Fiona joined the Board of AAA in October 2015.



Stud Males



Arcady Rum Punch

DOB: 04/05/2012

IAR: 186820

DETAILS: Punch produces an impressive, fine fleece of exceptional length and highly-crimped style, all over.

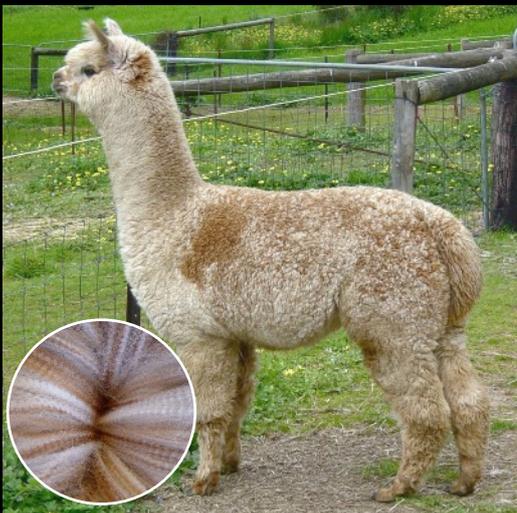
Shown lightly for halter wins of age and Colour Championships plus Champion Intermediate and Best Brown Fleece @ 2013 AAA National Show.

Reliable, quality bloodlines with his full and 1/2 siblings also winning age and Colour Championships.

CONTACT: ARCADIAN ALPACAS - Denise Moysey

PH: 08 8391 3270 | EMAIL: denise@arcadian-alpacas.com.au

WEB: www.arcadian-alpacas.com.au



Appaloosa Mosaic

DOB: 25/11/2013

IAR: 201651

DETAILS: Mosaic is just beautiful in every way ! We love him and so will you.

He is an exceptionally well-marked appaloosa with solid frame, very large testes, long staple growth with excellent crimp, alignment and extension of good fleece plus the most pleasant of personalities !

Mosaic's full and 3/4 siblings are also appaloosas.

CONTACT: ARCADIAN ALPACAS - Denise Moysey

PH: 08 8391 3270 | EMAIL: denise@arcadian-alpacas.com.au

WEB: www.arcadian-alpacas.com.au



Coolaroo Magic Ice

DOB: 24/09/2012

IAR: 186345

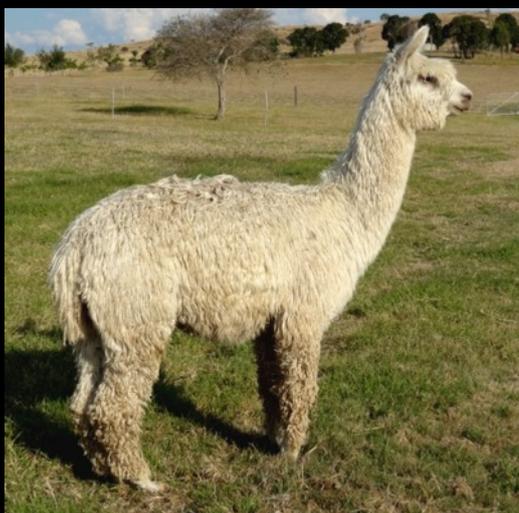
DETAILS: Sire: Windsong Valley Iceman, Dam: Jolimont Maggie
2013 M 19.2, CV 19.1% | 2014 M 21.1, CV 17.0% | 2015 M 24.20, CV 16.6%

Magic Ice has an enviable Show Record, he is well boned and beautifully upstanding with a classical head and correct conformation and proportions. However, it is his fleece that is exceptional. Long, individual staples of finely divisible micro staples. Each fibre is even and deeply crimped all over. Magic's breeding genetics across any herd will ensure a leap in density and style. Magic Ice has much to offer.

CONTACT: Coolawarra Alpaca Stud

PH: 02 4878 5266 | EMAIL: info@coolawarraalpacas.com.au

WEB: www.coolawarraalpacas.com.au



Kurrawa Just a Rookie

DOB: 5/2/2008

IAR: 135537

DETAILS: Kurrawa Just a Rookie (W) is sired by Jolimont Accoyo Miquel, the sire of many Champions and his dam, Surilana Milady Joanna has also produced many champions for Kurrawa and was a very successful show girl herself. Rookie has a very correct, strong frame and a highly lustrous, dense fleece, great lock structure and a fine fleece inherited from his sire. His fleece stats for 2014 are: 22.µ, SD: 5.4µ and CF: 90.5%. He has proven ability to pass that on to his cria, all of which returned ultrafine or superfine results. Rookie has a small brown spot so begs to be put over both white and coloured dams. These exceptional genetics are rare in Queensland. Rookie is co-owned with Kurrawa.

CONTACT: Didohama Suri Stud: Trisha Gauvin

PH: 07 5423 0799 | EMAIL: didohama@gmail.com

WEB: didohamasuristud.com



Benleigh Legend

DOB: 21/06/2003

IAR: 74978

DETAILS: Dr Jim Watts (the SRS fibre guru) describes Legend's fleece as "close to the processing ideal" (high follicle density, low micron primaries, lustrous with uniform crimp style) - a characteristic he consistently passes to his predominantly white champion progeny - together with elegant conformation and laid back personalities.

2015 shear – 23.5 micron (6 point blanket sample) 5.0 micron SD.

CONTACT: Bumble Hill Alpacas - Frank and Julienne Gelber

PH: 02 6365 3669 | EMAIL: gelber@bigpond.com

WEB: www.bumblehill.com.au



Bumble Hill Picotec ET

DOB: 30/03/2009

IAR: 149133

DETAILS: The product of two National Supreme Champions (Surilana Piccolo - Ring and Bumble Hill Magnolia - Fleece), Picotec delivers a heavy cutting, fine, even and highly lustrous fleece on a compact, masculine frame. He is siring a new breed of white and light/medium fawn fleece and ring champions.

2015 shear – 22.8 micron (6 point blanket sample) 4.8 micron SD.

CONTACT: Bumble Hill Alpacas - Frank and Julienne Gelber

PH: 02 6365 3669 | EMAIL: gelber@bigpond.com

WEB: www.bumblehill.com.au

Stephen Rowley
Nominated by South Qld Northern NSW Region

Stephen Rowley and Ann Livermore of Erragolia Alpacas have been members of the Australian Alpaca Association since 2004. Over the last 11 years, Stephen has made a significant contribution to the Australian Alpaca industry on both a regional and national level. At a National level Steve was a Board Member for two and a half years between 2008 and 2010.

At a regional level: Stephen and his partner Ann Livermore have been active participants in Australian Alpaca Week over a number of years and have willingly opened their property up to the public each year. They have provided a location for a number of alpaca breeders to participate in Australian Alpaca Week that could not have done so on their own.

Stephen has furthered the education of alpacas throughout the region coordinating, researching and presenting at events such as Wonderful World of Alpaca Workshops which are held yearly within the SQNNSW region.

Quite a few Children's television shows have been filmed at Erragolia Alpacas where Stephen has offered his property, animals, time, knowledge and skills to the production crews, assisting to put together suitable documentaries about the alpaca industry.

As a key supporter of regional activities, Erragolia Alpacas has been a successful exhibitor and supporter of both regional and Royal shows over the years, showing outstanding animals and providing much needed support in the organisation and operation of many regional shows. Stephen specifically has travelled many kilometres over the years collecting fleece at regional collection points and taking it to 'fleece collection days' for baling.



Alison Brolsma - Wharncliffe Alpacas
Nominated by the Tasmanian Region

At a regional level Alison has been involved in the Regional Committee over many years, filling the roles of President, Secretary, Newsletter Editor, Animal Welfare contact. She is a co-convenor of the Huon Show and has been a supporter of shows at a regional level and further afield, being an exhibitor at several National Shows and Colourbration. She has been involved in the organisation of and/or as a participant in numerous regional displays and events across the region including educational workshops for members and prospective alpaca owners.

At a National level, Alison has been a member of the Ethics panel for some years, and has reviewed numerous matters in this capacity, maintaining confidentiality, impartiality and providing considered recommendations. She has been a member of the Animal Health, Husbandry and Welfare committee, and was a contributor on the development of the Introduction to Alpacas Workshop material.

Alison has promoted alpaca product through sales of alpaca merchandise initially on behalf of the region, generating funds that were used to support various regional activities; and continues to promote alpaca product through her own business endeavours.



**Robert and Helen McLeod
Nominated by Victorian Eastern Region**

For the last 20 years Bob & Helen have run all the VER Shows that have been held. We at VER feel that is a fantastic effort and a great contribution to the Alpaca Industry in Victoria. We would therefore like to have both Bob and Helen acknowledged with an AAA Certificate of Appreciation as it has been a combined effort from both of them. By August 2015 Bob will also have served on the on the VER Committee for 15 years.



**Jill Willis – Sunline Alpacas
Nominated by the Qld Region**

Jill has volunteered her services as the QRIA magazine editor for many years and has given generously of her time and expertise to the Region.

It is due to her efforts that the Queensland Region is able to produce an interesting, informative magazine that all of our members look forward to and appreciate.

Jill has been the binding link for our Region with news, views and information.



**John and Penny Pittard
Nominated by NSW Southern Region**

John and Penny Pittard, Currabungula Alpacas, have been in the industry for in excess of 20 years.

They have been highly active in promoting both the animals and the benefits of the fleece- Penny heading up Alpaca Ultimate. They hosted a Camelid Dynamics handling workshop with Marty Bennett from the USA in 2006.

Penny was also instrumental in establishing the Premium bale concept in its first initiation & also organised shows in the Southern region around Goulburn, etc.

They were highly active in showing animals at both local and national level where they enjoyed much success.

Due to health issues they have now sold their whole herd. The region and the industry will be poorer for their departure but richer for their long term involvement.

Sarah & Perry Wheeler
Nominated by South Australian Region

Some Certificates of Appreciation go to the “up front”, visible folk in our industry and some go to the quiet achievers. The ones who work quietly and diligently behind the scenes, often tackling challenges that are invisible to many, but we all know if they don't work!

This nomination is for a partnership of quiet achievers. A couple who have individually and together, have given so much to our industry over many years.

Sarah and Perry Wheeler come from the invaluable fraternity of “do-ers”, the folk who don't say it “should be done” but are the ones who actually “make it happen”.

This is but a brief summary of their long legacy in the alpaca industry:

- Convenors AAA National Show and Sale in Adelaide 2009 and 2012
- President AAA SA Region (Sarah)
- AAA Board member (Perry)
- AAA National vice president (Perry)
- Regional email moderator (Perry)
- IT consultant to national office (Perry)
- Pioneering fleece collection (Sarah)
- Breeding both huacaya and suri
- Supporter of local and interstate shows with animals and fleece
- Activity involved in the promotion of craft and “value adding” to our fleece clip
- Convenor of Craft at shows (includes Nationals)

Sarah and Perry Wheeler are well deserving of our recognition and appreciation for their efforts to support and advance the alpaca industry in South Australia and beyond.



Reggie Smythe
Nominated by Victorian Western Region

Reggie has been a member of AAA and breeding alpacas since the early 2000's and served as the Western Region representative from the earliest days of the RASV Alpaca Committee until 2014

Has been and continues to be an active committee member for over a decade. His role has often been to mentor newer committee members and he continues to work quietly in the background helping to make the committee operate smoothly.

Convener of AlpacaFest for most (or perhaps all) of its time - and in particular its heyday - at Werribee. Not only was Reggie AlpacaFest convener but he undertook a substantial amount of the work involved in setting it up and making sure it ran effectively - including liaison with Werribee Park Equestrian Centre. He's been a regular and successful exhibitor at our shows and at the Royal - demonstrating that he and Margaret have been successful breeders of fine alpacas. Key to the organization and operation of our regional activities - including alpaca promotional events and public days.

Reggie has been one of the greatest workers for the region amongst our membership - certainly one who should be recognized.

He is famous across Victoria as the operator of barbecues - both for the breakfasts at AlpacaFest and at the Melbourne Royal - but also at other regional events and those BBQ lunches we've had at various events. And they've always been good BBQs. It should be noted that he has been ably supported by Margaret and she should share in the credit for the contribution that we recognize from Reggie. This is particularly so of the making or supplying of much of the food the members have been fortunate enough to consume at a range of functions and shows over the years.

Reggie has been one of the greatest workers for the region amongst our membership - certainly one who should be recognized.

Ken Willes
Nominated by Hawkesbury/Blue Mountains Region

Around 2000 Ken and wife Jill decided they'd had enough of living in suburban Sydney and started looking elsewhere. They eventually found 10 acres in Grose Vale which ticked all the boxes: great views, manageable sloping land, not far from the train to get Ken to work and, most importantly, space! Their house was built and they moved in at the end of 2002.

They soon realised that they hadn't taken into account the amount of grass that needed mowing. Even with the ever expanding garden Jill was developing, there were still a lot of acres needing attention! At this point they remembered meeting alpacas at the Kurrajong Scarecrow Festival. Jill thought they were 'pretty cute', 'aristocratic' even and friendly.

At the Small Farms Expo at Clarendon they started talking seriously with Jeanette Hollingsworth. Next the fencer was called in and Ken turned his hand at making some shelters. Their first five alpacas, from Alpacandes and Regal House, were purchased in December 2007.

Since retiring in 2008 Ken has become a stalwart of the Hawkesbury-Blue Mountains Region. Whenever the call goes out for help setting up for regional shows, Ken is always amongst the first to be counted. Over the years he has often sacrificed his own chance to show at both the Hawkesbury & Castle Hill Shows by taking on the role of Chief Steward and Chaperone.

In addition Ken has, over many years, taken on a number of concurrent roles. Ken has been the Hawkesbury-Blue Mountains regional Treasurer since 2009. He has been the regional Property Manager since 2010. Ken is the alpaca breed representative on the Hawkesbury District Agriculture Association Committee, a position he has held for the last 6 years and he was the financial controller for the 2011 National Show & Sale.

In addition to his duties as regional Treasurer, Ken has willingly managed the region's equipment. This task involves the physical loading and offloading of the region's pen panels and ensuring that the panel trailer is both functional and registered. His work includes not only regular audits of the regional assets, but also raising revenue from the loaning of such assets.

The finances of the annual "Getting Started With Alpacas" seminar, the alpaca component of the "Small Farms Expo" and the regional involvement during the National Alpaca Week campaign have been under his stewardship for the past 5 years - ensuring all remain financially viable. All of this has kept his brain busy and prevents him from having too much time for Jill's whiteboard list of chores!



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Care and feeding of... the Alpaca Head



CAMELIDynamics By Marty McGee Bennet

The alpaca's head, it is a big part of why we fall in love with them. The beautiful eyes, long eyelashes, the adorable lips; as we gaze at this enchanting countenance it is crucial to remember that they also breathe and eat with it.

Unfortunately for many alpacas their owners may appreciate the beauty of the head but don't understand exactly how to REALLY look out for it. For over twenty years I have been writing about halter fit, with most of the emphasis on the importance of the airway. In this article I re-visit the issue of halter fit but go further to have a look at the whole head, for inspiration I am gazing into the naked eye orbits of my personal alpaca skull. Alas Poor Yorick I knew him well.

The Problem

I spend my entire professional life and much of my free time working with, watching and obsessing about camelids. I have a pretty good understanding of their behaviour and what humans do to affect it both positively and negatively. In my experience, improper halter fit and its related effects create more behavioural problems than any other single thing.

- Many if not most alpacas in the show ring misbehave because their halters don't fit
- Most difficult-to-halter alpacas are that way because of their early experiences with the halter; both its fit and the way it is introduced
- Behavioural problems such as kicking, spitting and kushing can be and often are related to halter fit
- Any time an alpaca is wearing a halter that doesn't fit they are going to be more difficult to handle this means that shearing, trimming toenails, giving injections or doing an ultrasound can all be adversely affected by improper halter fit
- An alpacas small head, coupled with the leverage provided by their long neck make proper halter fit trickier and much more important

You would think that given its importance and the fact that we don't have a heap of other pieces of equipment to worry about, that we would just naturally get it right. Surely people that have owned alpacas for years would know how to properly fit a halter, NOT so. Go to any show, look at any magazine or show catalogue and you will see many examples of alpacas wearing halters that are uncomfortable if not downright dangerous. Most people can pick out a halter that REALLY doesn't fit. It slips way down the nose compresses the cartilage and looks obviously uncomfortable but there is way more to it than that! Halters can be frightening or uncomfortable or both for a variety of reasons. On top of that you can have a halter that isn't scary or uncomfortable or unsafe but it doesn't work to communicate and control the alpaca any better than a rope around the top of the neck.

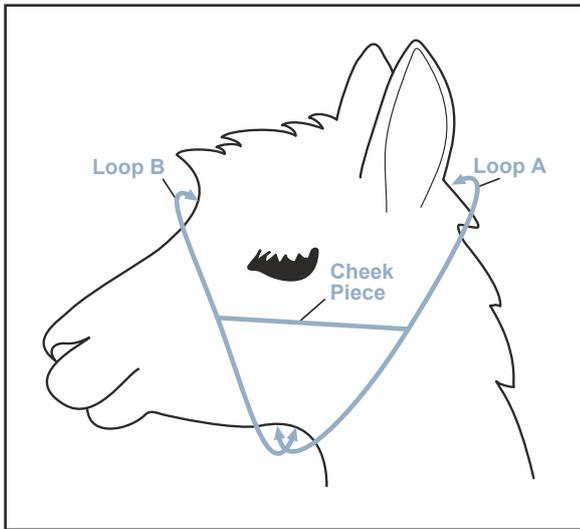
Halters that are Scary!

Clear the airway! That is the first thing we are taught to do in an emergency, we are taught to do this even before we stop the bleeding. This is the most basic element of lifesaving procedure. It is IMPORTANT! Alpacas are semi-obligate nasal breathers. Dissect this appellation and you understand that alpacas must largely but not entirely breathe through their noses. Go figure, they have that perfectly good opening called a mouth but it is almost entirely for eating (more on that later). An alpaca can die if his nasal passage is blocked because of this ANY suggestion that the halter may slip forward is going to frighten the alpaca. Imagine that someone is pushing your head slightly under water, if you tilt your nose just right you can still barely breathe but you begin to panic and struggle. Your tormentor is thinking "just settle down and cooperate and I will lighten up." Alpacas or humans that even think that they can't breathe will panic. The problem is not limited to nose bands that slip totally off the nose bone but includes halters that slip to the edge of the nose bone. On a related matter I think it is absolutely inappropriate to cover the airway of an alpaca, period. Covering an alpacas nose and mouth with a spit mask or sock or covering the head during shearing or an unpleasant medical procedure compromises the airway and increases the animal's level of discomfort or abject panic. Inhalation pneumonia is also not out of the realm of possibility. Once we have our hands on an alpaca we can easily aim the nose away from people to control where the spit goes. Spit washes off, bad memories stay with an animal for a long, long time maybe forever.

Alpacas have a frighteningly short nose bone (see photo), in fact most of what we call the nose is cartilage not bone. The nose bone on most adult alpacas ends about an inch or so in front of the eyes.



A halter that fits well is essential to the health, well-being, and good behaviour of your alpaca.



Not very much bone to hang a halter on! In fact the bone is so short that we ought not be using it at all for actual fitting. That's right leave the nose out of it!

Most people have trouble fitting a halter because they are trying to fit the nose and there just isn't enough nose to fit. Instead of fitting the nose bone I suggest that we focus instead on fitting the rear part of the jaw-bone and the back of the head. Almost every halter is composed of two loops, one that goes around the back of the jaw and behind the head (crown piece - throatlatch, loop A on drawing) and a second loop that goes around the nose (noseband, loop B on drawing) and connected by a short piece on each side called the cheek piece. Some halters feature adjustments in both of these loops others are sized according to the size of the noseband (a bad idea). In order to fit a halter that is not going to slip forward and off the bone we must begin by fitting loop A, and loop A MUST be reasonably snug because the nose bone is so short.

The adjustment of loop A is the one that prevents the nose-band from slipping forward off the bone. Here is the kicker, loop B THE NOSE BAND must be large enough that it doesn't interfere with the fitting of loop A. If loop B is not big enough.

Why Halters Are Uncomfortable

Alpacas eat or ruminate most of the day. Assuming that jaw movement is required for both of these activities it is probably safe to guess that the jaw moves side to side once every second or two for half of their waking hours. My math gives me 7200 side-to-side movements per day. If I am wrong by a factor of two that is still a lot of chewing. Put a halter on until the nose band won't go any further; as in putting a ring on a cone, and you are by definition tying the mouth shut or at least interfering with the alpaca's ability to chew freely. A properly fitting halter means that loop A (the loop that is composed of the throatlatch and the crown piece) must be tight enough to keep the nose band (loop B) from slipping off of the nose bone BEFORE the nose-band is fitted. With the crown piece snug there should still be slack in the nose band! Fitting the nose band means taking up any extra slack - it does NOT mean tightening it. You should still be able to fit a finger or two inside the nose band of a fitted halter. A nose band that compresses the skin covering the bottom mandible or impedes the animal's ability to chew is uncomfortably tight.

I do not know of any formal studies on the effect of tight nose bands on the alpacas ability to properly chew and there for digest their food. My intuition tells me that not only is a tight nose band a comfort issue but it is also a potential heath issue. Given a camelid's elaborate digestive process I cannot believe that properly chewing forage before swallowing it isn't important. Being able to ruminate properly must impact how the food is digested. An alpaca that wears a poorly fitting halter all day long (any many animals at shows wear them all night as well) for several days may be subject to stomach upsets leading to diarrhea or impactions from improperly digested food. At a minimum spending several days locked in a small pen with nothing to do but eat while wearing the equivalent of a muzzle, must be pretty frustrating and can't help but effect show ring performance.



This halter does NOT fit. It is restricting the animals ability to chew and is not resting on bone but on cartilage.



You can see what happens when a halter that is fitting in this way is actually used to control the alpaca the cartilage is compressed and the airway is compromised. When taking these photos I could hear the sound of her breathing become much louder and more obvious.

Fitting a halter a step-by-step process

You must start with a halter that is properly proportioned. To check this, buckle the crown piece of the halter you intend to use on a medium setting if you have 8 holes choose the 4th or 5th hole. Next open the nose band all the way to its largest setting. Measure both loops with a tape measure. Multiply the circumference of the nose band by 100 and divide by the circumference of the crownpiece/throatlatch. The resulting number should be 85 or larger. This means that the nose band when fully opened is at least 85% as big as the average size of the crown piece/throatlatch opening. For example if the opening of the throatlatch/crown piece is 15 inches then the nose band should be at least 13 inches. If this ratio is significantly off, your halter WILL not fit in the way I describe no matter what you do! Another clue is to look at the cheek pieces. Cheek pieces longer than 2" indicate that the halter is constructed with a nose band that is too small. When you put one of these halters on the animal the nose band gets stuck on the nose and therefore the cheek piece must be longer to connect loops A and B.

Once you have determined that your halter is properly proportioned you can put it on and fit it to your alpaca. You will do this each and every time you halter your alpaca. Prefitting halters just about guarantees that they will NOT be properly fitted. Putting on a halter is like putting on a lace up shoe you must loosen the shoe each and every time you put it on!

1. Open the nose band all the way up.
2. Put the halter on.
3. Tighten the crown piece as much as you can.
4. Put your fingers on each side of the nose band and tug forward. If you can pull the nose band to the very edge of or off the nose bone you must tighten up the crown piece. You can determine where the bone ends and the cartilage begins by pressing gently down if there is give, it cartilage not bone.
5. After you are totally satisfied with the crown piece adjustment take the slack out of the nose band. This means that the nose band should just gently touch all the way around the nose with out pressing or restricting the alpacas ability to move his mouth and jaw.
6. Check the crown piece about 10 minutes after you put the halter on or just before entering the show ring. Nylon stretches by approximately 33%. As the nylon stretches and the fleece compresses you could end up with a dangerous amount of slack in the crown piece.
7. Remember that halter fit counts all the time. Alpacas have small heads and young alpacas have even smaller heads, be precise! You must pay attention every time you put a halter on! Most car accidents happen close to home; most haltering dramas happen when we are just putting a halter for "a few minutes" to do something quickly.
8. Putting a halter on an alpaca is a compromise in comfort... nakedness is always more comfortable. TAKE the halter off when ever you can and if at all possible don't make your alpaca wear a halter over night.

Happy Haltering!



This halter fits! You can see that it must be right up close to the eye in order to be fully on the bone. Notice to that the nose band is not compressing the cartilage or the skin around the mouth. This alpaca still has full mobility when she chews.



Notice that when I pull down on the bottom of the halter (left), the nose bone supports the halter and does not compress the cartilage.



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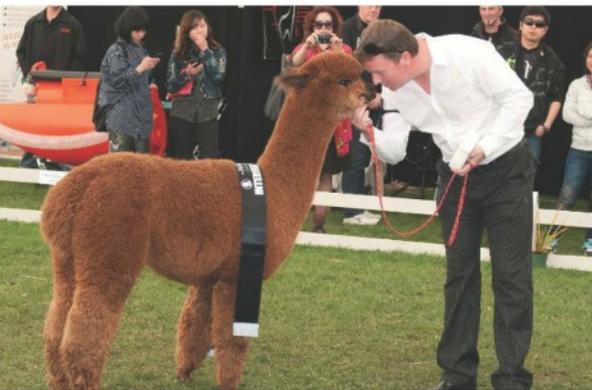
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alpaca 2016



NATIONAL SHOW

Friday October 7th **Saturday October 8th**
Breed Judge: Natasha Clark **Fleece Judge: Kate Mander**
Canterbury Show Grounds – RDA Building
Christchurch, New Zealand



Join us for New Zealand's largest and most prestigious Alpaca Show

- National Breed Show • National Fleece Show
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The website www.alpacaexpo.co.nz is the best place to find out all the info. Updates are being made regularly.



Alpaca Association
NEW ZEALAND



Alpaca Fleece

SKIRTING WORKSHOP

By Nelly le Comte, Coorabell Ridge Alpacas NSW

For most of us the shearing season has just been. A beautiful and hectic time for all of us to prepare our animals and harvest our beautiful fleeces. Shearing time is a culmination of a full year of looking after our alpacas and making sure they get the right nutrition to grow their fleece to the best possible quality.

As many of us are small breeders a fleece collection plan is currently being looked at by the Southern Queensland Northern NSW region, to see whether, by combining our forces, we could achieve better results in selling our fleece. We, as a region are currently looking into ways to find buyers interested in a variety of fleece qualities.

Several of our breeders in the region have sheds full of fleece collected over a few years. Most of us use some of the fleece for our own creative outlets, taking the fleece further into producing an end product. However, we still are left with bags of fleece stored somewhere.

Recent fibre collections have provided some valuable feedback, and in particular, have highlighted the need for fleeces to be properly skirted and prepared. Test results have indicated that the CV (co-efficient of variation) of the baled fleece was too high, ranging from 26% to 29% for fleece lines. Whilst there are a number of contributing factors to this outcome, poor skirting is the primary issue, and the one over which growers can have the greatest influence.

With that as a background, our AAA Fleece Liaison Officer Julie Hockings and her team, organised "The Fleece Preparation Workshop" which was held at Longueville Alpaca Stud in

November and was a great success. A small group of people attended the course and the bonus skirting/fleece collection day. Julie is a professional wool classer who specialises in alpaca fleece. An alpaca breeder herself, she has a herd of 120 in Dalveen QLD along with several dairy goats. Her fascination with alpacas started around 1995 and whilst working in Brisbane, the love of the land drew her to purchase a property and her first alpacas in 1997. As a wool classer she is responsible for the quality control of the bales pressed and prepared for the potential buyer. Her main responsibilities are to sort like with like to be able to get consistent lines which will process in a predictable manner, enabling the potential buyer to meet their objectives.

Even for seasoned alpaca breeders it was great to learn how to prepare and skirt the fleeces for a better result. Even our finest animals have a few shorter or coarser fibres and we learned that by taking those out prior to sending the fleece for commercial collection could give us a higher price for the fleece. The course was all about how to achieve the best results for your fleece, focusing mainly on the commercial side of fleece production; preparing your fleece prior to shearing to achieve the best quality; setting up a workflow for your alpacas, the shearer, the roustabout and the helpers; and preparing and checking the shearing shed to ensure a safe and productive work environment.

A great workflow will have enough people on board to not only shear, but also skirt immediately after shearing on the skirting table. Several buckets need to be placed strategically for short and long coarser hair, and a bucket for good pieces, that are valuable, but just not quite good enough to be kept with the saddle fleece.

The saddle fleece cannot be contaminated with other lesser value fleece, or off-sorts, so our alpacas need to be lined up starting from white and working through the colour chart, always shearing the finer animals before the coarser ones in each colour category. Unless of course, you breed mainly dark or coloured alpacas, then they represent your most valuable commercial fleece, and you wouldn't want to see them contaminated with white fibres!

Micron testing prior to shearing could help you make a shearing plan. We don't all have many people at hand to create the ideal shearing set-up, so the course covered suggestions of how to work with less people and prepare your fleeces for skirting on a later day. Most people at the workshop, however mentioned that, the later day was always postponed, so they preferred to look at the option of skirting on the day of shearing, to get it all done with the best results in the least time consuming way.

Fleece has a tendency to mesh together when placed in a plastic bag. On our bonus fleece collection/skirting day, we all spent way too long trying to lay the bagged fleeces out on the skirting table. This highlighted the difficulties faced by growers if they don't follow some simple strategies for bagging fleeces at shearing time in a way that they roll out perfectly when the time comes to skirt them.





We looked at various fleeces and learned how to find flaws within our fleece. Testing individual pieces of fleece, showed us how to check whether the fleece was in optimal condition. If the alpaca suffered from a worm burden, sickness or had been stressed in some way since the last shearing, it can show up as flaws in the fleece. This can lead to a condition known as "tender" fleece where the fleece breaks easily when processed and devalues the end product.

The main goal of skirting your fleece for commercial purposes is to separate your best quality from the lesser qualities. As the fleece gets divided it will effect the weight. For example, some of our fleeces skirted and prepared were 1.5 kilo to start with and ended up with a top quality saddle of 1.1 kilo. Of this, 200g went into good pieces, 100g went into long hairy pieces, and 100g went into short hairy pieces. However if we sent the total 1.5 kilo to the fleece classer, the whole fleece would be downgraded due to the presence of coarse guard hair, which would result in a low return for the whole fleece.

For Julie, as an alpaca classer there is nothing more disappointing than to downgrade a great fleece due to the presence of just a few lesser quality pieces.

There is a market for all quality fleece, from the leg hair to the saddle. Once separated and collected we can find buyers. As a region we first have to start by documenting the amount and quality of regional fleece. We will start with a few collection days and work towards a database that will help us in the future to effectively collect well skirted fleece. Our goal is to maximise the value of our fleece.



With special thanks to Rosemary and Liz from Longueville Alpacas for their hospitality.

For more information on the Fleece skirting course contact your region's Fleece Liaison officer. Alternatively contact the SQNNSW FLO: Julie Hockings : juliehockings@activ8.net.au

Alpaca Myths 1

SD or CV - What's it to be?

By Cameron Holt

Having some time ago passed the half century and now contemplating an early retirement I have decided to write a couple of articles based on myths, propaganda and misunderstandings.

Alpaca fleece starts as a "living fibre" and changes over its lifetime whereas synthetics, like polyester, are determined by the structure of their spinneret which determines its fineness. An alpaca fibre changes as it gets broader in micron, and the base of the fibre becomes greater, synthetics does not have this change. This is why I believe mathematics does not account for alpaca and some other animal fibres lifetime production. When I talk about this I have a habit of saying that true maths does not always paint the right picture.

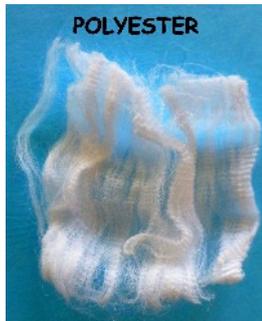
A very good friend of mine, Professor Brian Sawford, who has been my mathematical backstop throughout my research programs, politely informed me that the maths are correct, the model is wrong. It is this living alpaca fibre which makes it so hard to get the model right as you would expect, but when dealing with synthetics it is more predictable.

I intend to clearly show this in this article.

Alpaca fibre is like all animal fibres in its basic characteristics, unlike those manmade fibres such as polyester.

POLYESTER FIBRE: Is a petroleum based product.

The ingredients, polymer chips, are melted and like nylon forced through spinnerets (below) (usually a similar micron) and the resultant filaments are cooled and drawn into a yarn. Percentage usage is approximately 21%. Properties are similar to nylon.



When polyester has a false crimp inserted by heat it has reasonable elasticity in the fibre. The uses are also similar to nylon.

The medical industry sometimes uses polyester for the replacement of arteries.

Here is a histogram (below) of the above "Top" of polyester. You can see the narrow mixture of microns as well as the straightish profile and an alpaca histogram below that with the wider base.

MICRON MAN - POLYESTER FIBRE ANALYSIS

Client: International School of Fibres
10 Gwaimarra Grove
Pambula Beach NSW 2549
Group ID: Polyester Test

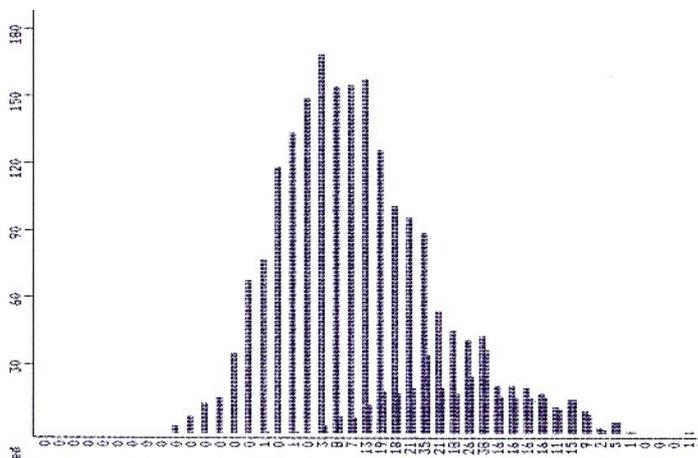
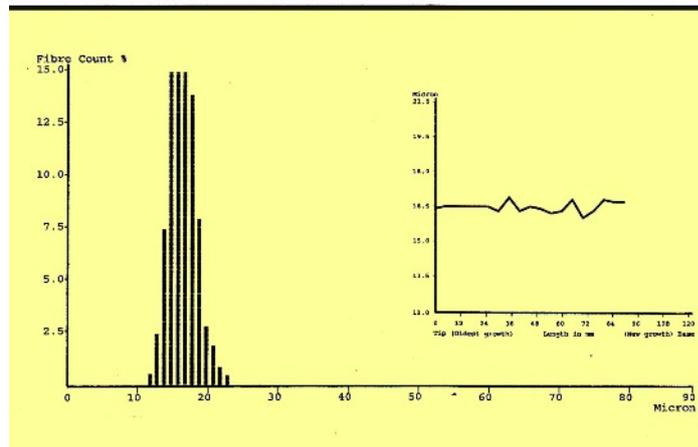
Date Sample Taken -
Test No. ISF50911
Wool Growth: months

Contact: Micron Man
Our Phone (08)94181733
P.O. Box 1423
Bibra Lake W.A. 6965
Age at Sample Date: months

Bartag : **ISF-POLY**

Micron Deviation :	-0.4 mic	Micron :	16.7 mic
>30 :	0.0 %	SD :	2.0 mic
		CV :	12.2 %
		CE :	%
		SP :	15.3 mic
		CP :	100.0 %
		CRV :	71.7 Deg/mm
		SDC :	66.7 Deg/mm

Total Fibres counted : 4190

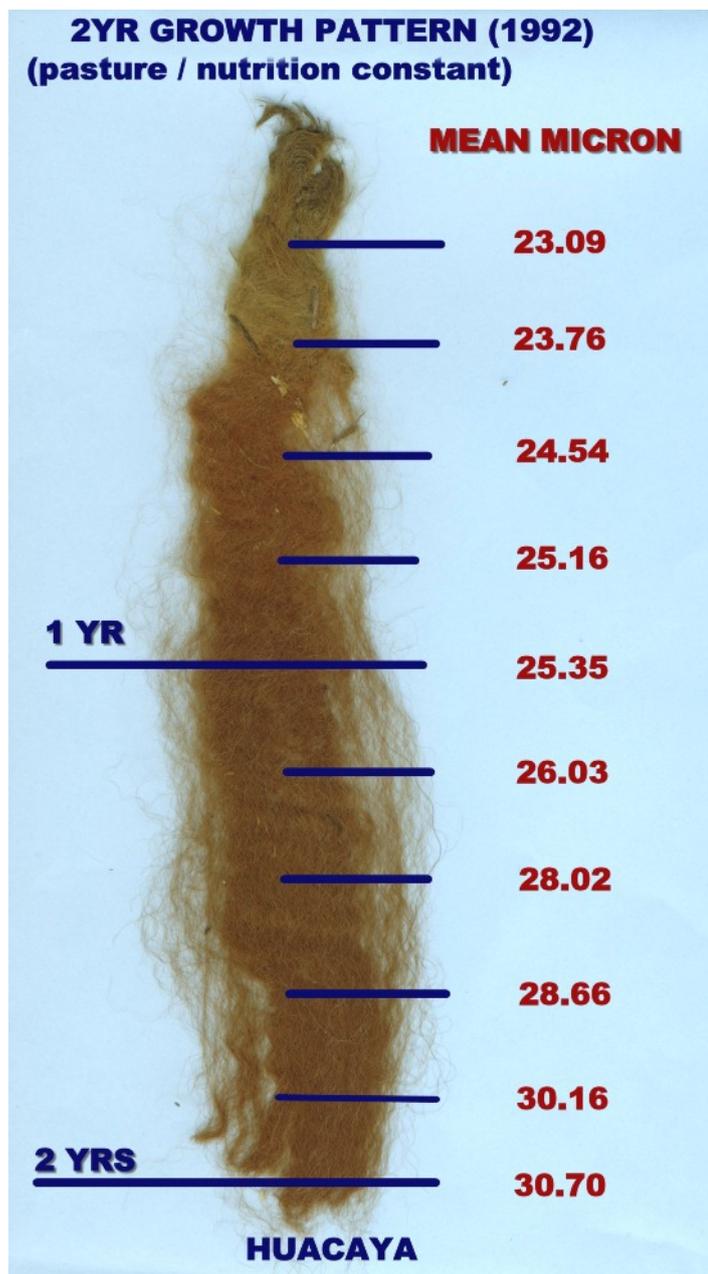


Alpaca as mentioned is a living product and like Merino sheep's wool, changes its micron from year to year (Merino is more stable in the adult ages unlike Alpaca which tends to increase in micron {blowout} up to 5/7 years of age).



The alpaca's skin structure can be compared to the synthetic spinneret. The alpaca spinneret (skin) however has a variation of follicles (holes) producing fibres (primary, secondary and secondary derived fibres) of different sizes as shown at left.

The micron of fibres change in size frequently during its year's growth.



Some of the factors, which cause the changes, are:

- Climate
- Nutritional changes
- Stress
- Parasite infection
- Age

The Genotype of the Alpacas will be the determining factor on how extreme the variance will be. The environmental conditions, health and age will affect the micron increase/decrease percentage.

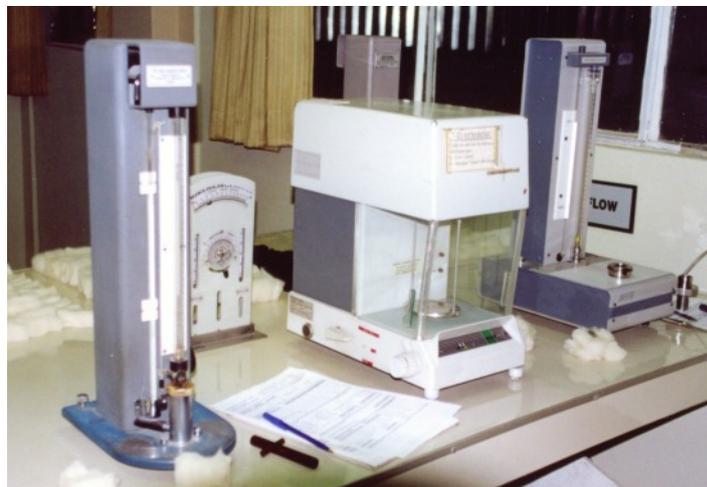
Genotype is the genetic blue print of the animal and it is stamped at birth. This normally cannot be altered. Phenotype is a combination of genotype and environmental effects (nutrition, husbandry practices, and health). Phenotype describes those characteristics or traits that we can see or measure i.e. physical appearance, fibre diameter etc and is controlled by the genetic make and those areas mentioned above (pasture etc).

It has been well documented in the goat and sheep industries that animals grazing on pasture that has a higher nutritional level will produce longer fibre, greater fleece weights and a coarser micron than those grazed on lesser pastures (assuming no other influences such as pregnancy, illness etc). Supplementary feeding of a high protein diet can also produce the same effect. A demonstration of this can be seen where animals in the "Cereal producing Zone" (given no other influence e.g. age) can produce a 25 micron fleece and when transferred to a property with better pasture in a "High Rainfall Zone" will have the micron increase. It is not unusual to have variances as close as a few kilometres (or miles) due to the change in the soil values (minerals).

SD OR CV

Alpaca Breeders who know me, know that I am a CV person when given the choice between CV and Standard Deviation as I find it easier to use.

Today a number of alpaca breeders use Standard Deviation as part of their selection criteria. Many have formulas which have been well written about and others still use CV along with spinning fineness (SF). When measurement first came into use in the Australian sheep industry mostly with Merinos, micron was normally the main measurement and the machine being used was known as an airflow machine (below).





Some years later a projection microscope which measured 400 / 600 fibres was used to calculate the CV and then later spinning fineness was used in the sheep industry.

TERMS

MODE: The most commonly occurring value. (The highest peak or the micron with the greatest number of fibres recorded against it).

MEAN: The average of those values (MEAN MICRON).

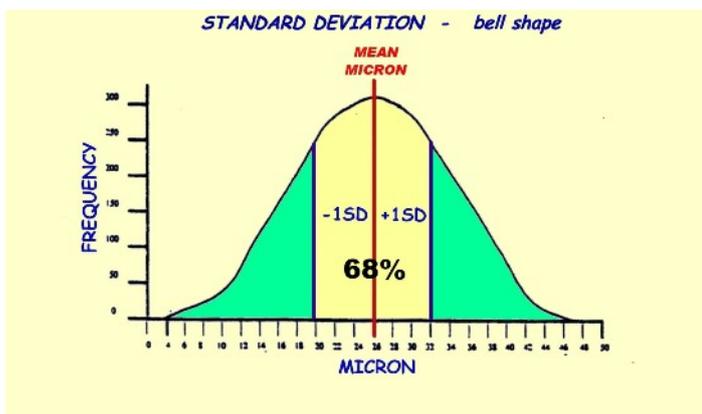
When the mean (average) and mode are similar then the shape of the histogram is said to have a bell shaped curve which indicates an even spread of the population around the mean, however the height and base can vary.

MEAN FIBRE DIAMETER: This is a measure of central tendency and gives mean (average) of the fibre diameter in the sample expressed in microns. One micron is one millionth of a metre.

STANDARD DEVIATION (SD): This indicates how the fibre diameter in the sample varies around the mean. The smaller the standard deviation the less the variation around the mean.

One standard deviation (+1, -1 either side of the mean), will represent 68% of the fibres measured e.g. given: Mean 26 microns SD 6.0 microns then 68% of the fibres will occur between 20 and 32 micron.

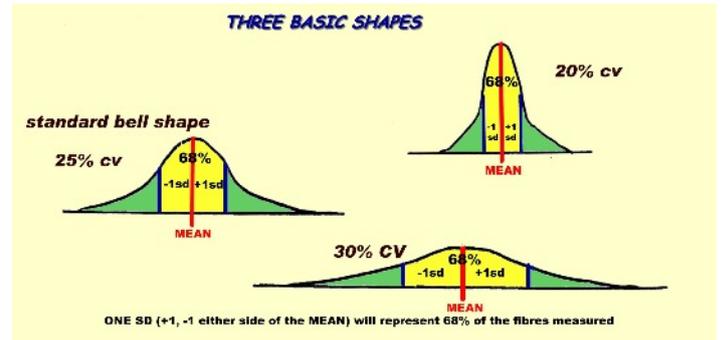
Two standard deviations will represent 95% of the fibres measured (95% of the fibres will occur between 14 and 38).



SKEWNESS: Is a measure of symmetry, or more precisely, the lack of symmetry. A distribution, or data set, is symmetric if it looks the same to the left and right of the centre point (top right).

"The concept of SD assumes that the fibre diameter is normal (bell shaped)"

(Summerville AWTA 2000).

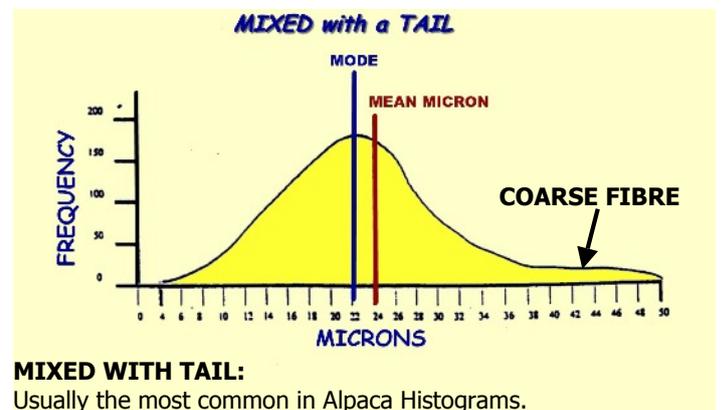


This normal curve (frequency distribution) is a theoretical curve and 50% of the measurements fall either side of both the "mode" and "mean" that have both the same reading.

Normal Alpaca distributions of measurement curves, as mentioned above, are rarely seen.

Both SD and CV measure the degree of variation of micron in the tested sample.

KURTOSIS: is a measure of whether the data are peaked or flat relative to a normal distribution. That is, data sets with high kurtosis tend to have a distinct peak near the mean, decline rather rapidly, and have heavy tails.



MIXED WITH TAIL: Usually the most common in Alpaca Histograms.

CO EFFICIENT OF VARIATION (CV): CV measures the spread of fibre diameter variation relative to the average and is expressed as a percentage of variation. The CV is calculated using the mean and standard deviation. The CV enables various populations to be compared to each other.

COARSE EDGE MICRON (CEM): Measures the number of microns greater than the average micron where the broadest 5% of fibres lie. Generally the lower the coarse edge percentage the better the quality and the more uniform the fibre diameter distribution.

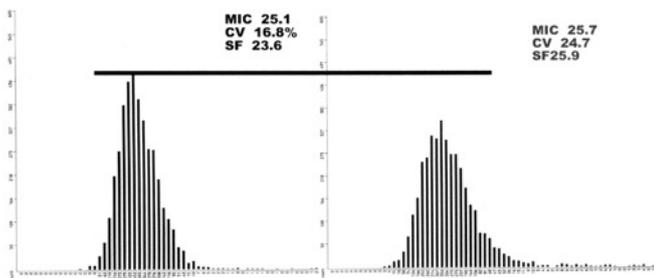
CE (Coarse edge): The percentage of fibres that lie over 10 microns greater than the average fibre diameter. Used by some SRS breeders.

COMFORT FACTOR % OF FIBRES <30 MICRONS (CF): Refers to the percentage of fibres in the tested sample below 30 microns. This was referred to as Prickle factor (PF). Both readings are associated with wools that have 5%+ of their fibres greater than 30 microns. The wool prickle in apparel garments can cause skin irritation due to the coarser wool fibres irritating the pain receptors of the skin surface.

SPINNING FINENESS: This is a measurement (using micron and CV %) to estimate the performance of fibre when it is spun into yarn. It has been shown in the sheep industry that if you can reduce your CV by around 5% then you achieve a yarn that performs like a yarn one micron finer (spinning fineness) The reverse also applies.

E.g. 22 micron - CV 24% = spinning fineness approx. 22u
 22 micron - CV 19% = spinning fineness approx. 21u
 22 micron - CV 29% = spinning fineness approx. 23u

Those with a high CV may not only indicate fibre that varies greatly from the mean but may also indicate a larger number of coarse fibres (which may or may not be guard hair) throughout the staple or fleece. This is usually identified by the histogram shape (below).



SPINNING FINENESS FORMULA

Spinning Fineness = $0.881MFD \sqrt{1 + 5 \left(\frac{CVD\%}{100}\right)^2}$

MFD = measured Mean Fibre Diameter (microns)
 CVD = measured Coefficient of Variation of Fibre Diameter (%)
 (AWTA)

COMMENTS AND STATEMENTS REGARDING THE USE OF STANDARD DEVIATION AND CV

A number of comments and misunderstandings I believe are continued in the discussions of this area and to give an example I mention some below.

Standard Deviation stays the same and does not alter across all micron groups but the CV does not and has no uniformity

CV is inaccurate so we don't use it any more.

Buyers of fleece now use "SD".

The usefulness of using CV in alpaca breeding programs is very limited.

Standard Deviation is an independent measurement based on the fibre diameter.

The CV however is not an independent measurement because it is obtained using a mathematical formula to convert it to a percentage.

To answer those comments let me start with the following:

Standard Deviation and CV are both measurements of uniformity of the alpaca fibre.

Buyers of fleece now use SD.

In the fleece industry particularly in the buying and selling on the international market Coefficient of Variation is recognised as the main source of evenness. This measurement is used for micron and also for length. Another measurement which is used by some buyers is spinning fineness.

CV is still preferred by most buyers over the spinning fineness (SF).

NOTE: No SD used in the alpaca sale catalogued (below).

ALPACA FLEECE AUCTION CATALOGUE

Selling broker : WGMS - WGM WOOL Sale identity ref : 99/99 Room :
 Invoking broker : WGMS - WGM WOOL Ag per AWSR 7.3.1
 Releasing broker : WGMS - WGM WOOL Page no : 1
 Catalogue group : ODDS Pack form : 1 : Standard (farm) bale

An example of a commercial alpaca auction catalogue showing the important traits which the buyers look for when purchasing alpaca fibre

BSH	ACY	ACEV	SCD	SCD	SCH	VMB	MIC	S/C	S/S	POB	SECT	LOT	BLS
MULES			TOP	PPH	SEC	NETT		MM	CV%	M	D	NO	CT
0.0	82.7	87.4	88.2	88.9	87.0	0.1	22.3L					51	1
0.0	109	114	119	116	112	130	ALPHA						
0.0	84.7	88.4	89.2	90.0	88.0	0.1	24.4L					52	1
0.0	111	116	117	118	115	131							
0.0	82.4	86.1	86.9	87.7	85.7	0.1	22.3L					53	1
0.0	73	77	77	78	76	89							
0.0	83.4	87.1	88.1	88.9	86.9	0.1	22.3L					54	1
0.0	78	81	82	82	80	93							

YIELDS 83.4% (ACY) weight : 78 kgs net (relevant to yield type)

MICRON + Testing machine (L) (Laser)

CV%

CLASSING BRAND Huacaya- White- "B" Length - Fine

Every lot of merino sheep's wool sold at auction and privately that has a full test result gives CV's on Micron and length. However with Alpaca fleece the length is not mechanically measured due to the staple behaviour. The length is therefore manually assessed by the buyer.

SD, CV of micron and SF does not take into consideration fibre length, strength and position of the break. These are major assessments required by the buyers and processors. The basic selling measurements include Micron, CV of micron. Length, CV of length and Strength.

NOTE: During processing short fibres (noils) are combed out. These may be just weak fibres broken off or immature fibres. Short secondary derived fibres, usually finer than the average, may also be combed out. In any case the general rule of thumb in the Worsted process is that the "processed top" micron can be between .4 and 1.5 microns coarser than the greasy micron result (depending on the fineness). Greasy length can also be affected during the processing stages. Length can be reduced by 5 - 15 mm in the "Top". In the Woollen process the sliver is not combed and these changes are not seen at that level.

It is "processed top" measurements upon which the actual "tops" are sold.

Standard Deviation is an independent measurement based on the fibre diameter. The CV however is not an independent measurement because it is obtained using a mathematical formula to convert it to a percentage.

Both SD and CV both calculate the degree of variation of the measured micron. These results of SD and CV are mathematically determined.

CO EFFICIENT OF VARIATION (CV)

As mentioned this is the percentage of variation in the measurements and is related to the mean and standard deviation. The CV enables various populations to be compared to each other.

EXAMPLE: When measuring the consistency of the length in a packet of building nails a standard deviation would be a very good measure of evenness. However, if the local fruit shop wanted to measure the consistency of the roundness of the oranges and the apples and the consistency of the length of the bananas, the standard deviation could not be used as a comparative value. They are three different products and therefore the measurement of evenness to use would be the co efficient of variation. The saying goes that you have to compare apples with apples.

The same applies with the alpaca fibre. Each micron group you wish to compare is like the above example. Comparing say a 15 micron with a 20, a 25 and a 30, the standard deviation would not be a reliable method for comparison. The co efficient of variation enables you to make that comparison. We know that a 14 CV is a very uniform fibre, around 24 per cent is average and over 30 is uneven and 35 is very uneven and undesirable.

THE FORMULA FOR CV% IS

$$\frac{SD \times 100}{MICRON} = CV\%$$

MICRON

THE FORMULA FOR SD% IS

$$CV \times MICRON = SD$$

1

NOTE: In the early 1990's, the average CV for micron (using Australian testing methods) for single site samples for Huacaya was around 24/25 % (Holt unpublished data 1992). The average CV (1995) over the individual sites tested for the Suris was 24.4% with the Huacaya being 23.2%. 2003 data shows Huacaya at average 21/23% CV.

Grid samples can have a higher CV if the animal varies over the body. A single site should be more even (mid side) therefore having a lower CV than the grid.

The laboratory test method of single cut per staple, butt-cut (as frequently used in USA) gives a average 2% lower CV than the single site (using Australian test methods) used in Australia and New Zealand. These tests measure the entire staple.

The Co Efficient of Variation was seen to be independent of fibre diameter. That is fibre diameter was not seen to have any effect / influence on the CV.

Variation of CV over the life of an alpaca (Australian tests) tends to indicate that the first year of fleece production shows a higher CV, especially if tested under 6 months of age (anecdotal and from breeders tests). An educated guess would probably suggest this is caused by the late producing secondary follicles although studies on alpacas has not been done in this area but in sheep and goats it was found that some follicles were not producing fibres until the 4 - 6 month period. The second years fleece onwards tended to show a CV staying in a range of around 2 per cent variance.

The butt-cut did not show the first year fleece with a higher CV, most likely due to the butt- cut position being one centimetre from the shorn end. At 12 months growth this position has a full complement of fibres growing.

Standard Deviation stays the same and does not alter across all micron groups but the CV does not and has no uniformity. CV is inaccurate so we don't use it any more.

There is not much I can say except these statements are NOT CORRECT!

I have supplied lots of data from some 7000 Huacaya's giving an all in result (below).

GENERAL DATA

ALPACA COMPARISON SD-CV-SF PER MICRON ALL COLOURS
(7000 Individual Alpaca results averaged -- HUA)

MIC	MIC AVE	S D	C V	S F	SF calculated using CV
15	14.56	3.66	25.00	14.79	SD becomes greater with increase of micron (3.66 SD/14.56 mic to SD 9.93/MIC 45.38)
16	16.06	3.83	23.85	16.06	
17	17.06	4.17	24.48	17.15	
18	18.05	4.38	24.29	18.12	CV decreases slightly as the micron becomes coarser (25.0 CV/14.56 mic to CV 21.87/MIC 45.38) Average CV = 21.61
19	19.06	4.56	23.90	19.07	
20	20.05	4.64	23.13	19.92	
21	21.02	4.88	23.21	20.90	Earlier studies in the mid 90s indicated that CVs tended to be around the 24/25% mark.
22	22.02	5.00	22.72	21.79	
23	23.01	5.18	22.50	22.73	
24	23.99	5.29	22.07	23.61	It is understandable that some fibre could become more uniform at the strong end as most of the fibres are coarse.
25	25.02	5.44	21.74	24.56	
26	25.99	5.54	21.33	25.41	
27	26.99	5.73	21.23	26.37	Care needs to be taken as every batch of animals can be different and give slightly different results.
28	28.00	5.87	20.97	27.30	
29	28.98	6.00	20.73	28.18	
30	29.87	6.18	20.71	29.04	There are over 7000 alpacas tested with this data.
31	30.99	6.45	20.81	30.17	
32	32.00	6.66	20.80	31.17	
33	32.97	6.80	20.62	32.04	
34	34.03	7.02	20.64	33.08	
35	34.97	7.20	20.59	33.99	
36	36.00	7.79	21.65	35.30	
37	37.02	7.63	20.62	35.98	
38	37.94	7.97	21.00	37.05	
39	38.99	8.16	20.94	38.08	
40	40.40	9.66	23.91	40.49	
42/43	42.77	10.57	24.70	43.15	
44/46	45.38	9.93	21.87	44.56	
AVE	25.63	5.57	21.91	25.15	

Averages showing colour, age Showing the yearly increase (Blowout) at ages from 1- 12 only (5800 Huacaya's).

GENERAL DATA - AGE BREAKDOWN

STUDY THESE FIGURES:

GENERAL DATA

ALPACA COMPARISON SD-CV-SF PER MICRON ALL COLOURS
(6000 Individual Alpaca results averaged -- SURI)

MIC	MIC AVE	S D	C V	S F
15	15.01	3.91	26.10	15.31
16	16.09	3.68	22.87	15.94
17	17.05	4.07	23.89	17.05
18	18.10	4.32	23.90	18.10
19	19.06	4.45	23.32	18.98
20	20.06	4.52	22.56	19.82
21	21.03	4.79	22.77	20.82
22	22.02	4.89	22.21	21.69
23	23.01	5.13	22.29	22.69
24	24.00	5.22	21.74	23.54
25	25.01	5.39	21.54	24.50
26	26.00	5.50	21.17	25.39
27	27.00	5.72	21.21	26.37
28	28.01	5.84	20.84	27.27
29	28.97	5.99	20.66	28.16
30	29.96	6.25	20.86	29.18
31	30.99	6.43	20.75	30.15
32	32.00	6.69	20.90	31.19
33	32.97	6.76	20.51	32.01
34	34.03	7.02	20.63	33.07
35	34.98	7.27	20.78	34.05
36	35.98	7.91	21.97	35.38
38	37.83	7.94	20.97	36.93
42	42.08	9.97	23.70	42.07
AVE	26.3	5.6	21.6	25.7

SF calculated using CV
SD becomes greater with increase of micron (3.91 SD/15.01 mic to SD 9.97/MIC 42.08)
Average SD = 9.97
CV decreases slightly as the micron becomes coarser (26.10 CV/15.01 mic to CV 23.70/MIC 42.08)
Average CV = 21.61
Earlier studies in the mid 90s indicated that CVs tended to be around the 24/25% mark.
It is understandable that some fibre could become more uniform at the strong end as most of the fibres are coarse.
Care needs to be taken as every batch of animals can be different and give slightly different results.
There are over 6000 alpacas tested with this data.

GROUP ; WHITE					NUM 1620	YEAR TESTED 2003		
AGE	AVE Mic	S D	C V	S F	Curve Deg	%> 30	C F	AVE AGE
1	22.3	4.8	21.7	21.9	37.4	7.4	92.6	
2	24.3	5.1	21.2	23.7	36.8	13.6	86.5	
3	25.9	5.3	20.6	25.1	35.8	19.7	80.3	
4	27.1	5.6	20.7	26.3	34.9	26.4	73.6	
5	27.9	5.9	21.1	27.2	34.7	30.4	69.6	
6	28.8	5.9	20.4	28.0	32.1	33.3	66.7	
7-8	28.8	5.9	20.5	28.0	32.6	34.4	65.6	
9+	28.1	5.9	21.2	27.4	33.4	31.7	68.3	
AVE	25.0	5.3	21.1	24.4	36.0	17.6	82.4	2.9

OBSERVATIONS (using WHITE group)

CV is calculated using SD

SF calculated using CV

SD becomes greater with increase of micron (4.8 SD/22.3 mic to SD 5.9/MIC 28.1)

Average SD = 5.3

Average CV = 21.1

There are over 5400 alpacas tested with this total data.

GROUP; BLACK					NUM 800	YEAR TESTED 2003		
AGE	AVE Mic	S D	C V	S F	Curve Deg	%> 30	C F	AVE AGE
1	25.8	6.0	23.3	25.7	27.1	21.2	78.8	
2	28.2	6.2	21.9	27.7	27.1	33.4	66.6	
3	29.5	6.4	21.7	28.9	26.3	38.9	61.1	
4	29.9	6.4	21.5	29.3	26.2	41.7	58.3	
5	30.3	6.7	22.1	29.9	25.8	43.2	56.8	
6	29.6	6.2	21.1	28.9	27.0	39.2	60.9	
7-8	31.7	7.1	22.4	31.3	24.7	50.2	49.8	
9+	30.4	6.5	21.6	29.8	25.6	42.9	57.1	
AVE	28.0	6.1	21.9	27.5	29.2	31.7	68.3	3.3

GROUP; BROWN					NUM 950	YEAR TESTED 2003		
AGE	AVE Mic	S D	C V	S F	Curve Deg	%> 30	C F	AVE AGE
1	23.7	5.4	22.7	23.5	33.6	13.7	86.3	
2	26.3	5.7	21.8	25.8	32.8	22.6	77.4	
3	28.0	6.0	21.4	27.3	31.0	30.0	70.0	
4	29.1	6.2	21.3	28.4	30.5	37.2	62.8	
5	29.6	6.2	21.0	28.9	29.7	39.8	60.2	
6	30.2	6.5	21.5	29.6	28.5	43.3	56.7	
7-8	29.5	6.3	21.6	28.9	29.2	38.2	61.8	
9+	30.9	6.8	21.9	30.3	27.9	45.5	54.5	
AVE	27.3	5.9	21.8	26.7	31.5	28.3	71.8	3.3

GROUP ; FAWN					NUM 1760	YEAR TESTED 2003		
AGE	AVE Mic	S D	C V	S F	Curve Deg	%> 30	C F	AVE AGE
1	22.9	5.0	22.1	22.5	36.9	9.9	90.1	
2	25.0	5.3	21.2	24.4	35.9	17.1	82.9	
3	26.7	5.5	20.7	25.9	35.1	24.3	26.7	
4	27.3	5.7	21.0	26.6	34.2	27.5	72.5	
5	28.2	5.9	21.1	27.4	33.5	31.6	68.4	
6	29.1	6.2	21.3	28.5	32.1	37.6	62.4	
7-8	29.1	6.2	21.3	28.4	31.9	35.7	64.3	
9+	29.1	6.7	22.8	28.9	31.3	34.9	65.1	
AVE	25.7	5.4	21.3	25.1	35.3	20.8	79.2	2.9

GROUP ; GREY					NUM 325	YEAR TESTED 2003		
AGE	AVE Mic	S D	C V	S F	Curve Deg	%> 30	C F	AVE AGE
1	24.1	5.7	23.9	24.0	33.7	15.0	85.0	
2	26.3	6.1	23.4	26.2	32.8	23.8	76.2	
3	27.2	6.2	22.9	27.0	33.0	26.6	73.4	
4	27.4	6.3	23.1	27.2	33.1	27.6	72.4	
5	28.4	6.2	21.9	27.9	32.0	32.4	67.6	
6	28.9	6.3	22.0	28.4	31.9	35.0	65.0	
7-8	29.8	6.3	21.5	29.2	31.2	42.6	57.4	
9+	31.1	6.9	22.2	30.7	26.4	48.7	51.3	
AVE	26.8	6.1	23.1	26.5	32.6	26.0	74.0	3.3

COMMENTS:

The data above clearly shows that these statements are a myth. Again let us remind ourselves that alpaca is a "living fibre" and each alpaca animal changes its micron as it gets bigger and older.

The blowout data is demonstrated below. Perhaps the statement could be more accurately used when dealing with synthetic fibres, e.g. polyester.

YEARLY INCREASE (BLOWOUT)

5860 WHITE & ALL COLOUR			1618 WHITE ONLY		
mic	% increase +/-	age	mic	% increase +/-	
23.21		1	22.3		
25.48	9.8	2	24.3	8.9	
27.7	8.7	3	26.0	7.0	
28.1	1.4	4	27.0	4.1	
28.91	2.9	5	28.0	3.6	
29.2	1.0	6	28.7	2.5	
29.82	2.1	7	29.5	2.9	
29.41	-1.4	8	28.0	-5.3	
29.46	0.2	9	28.3	1.1	
29.46	0.0	10...12	27.8	-1.6	

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