

# Alpacas

A U S T R A L I A

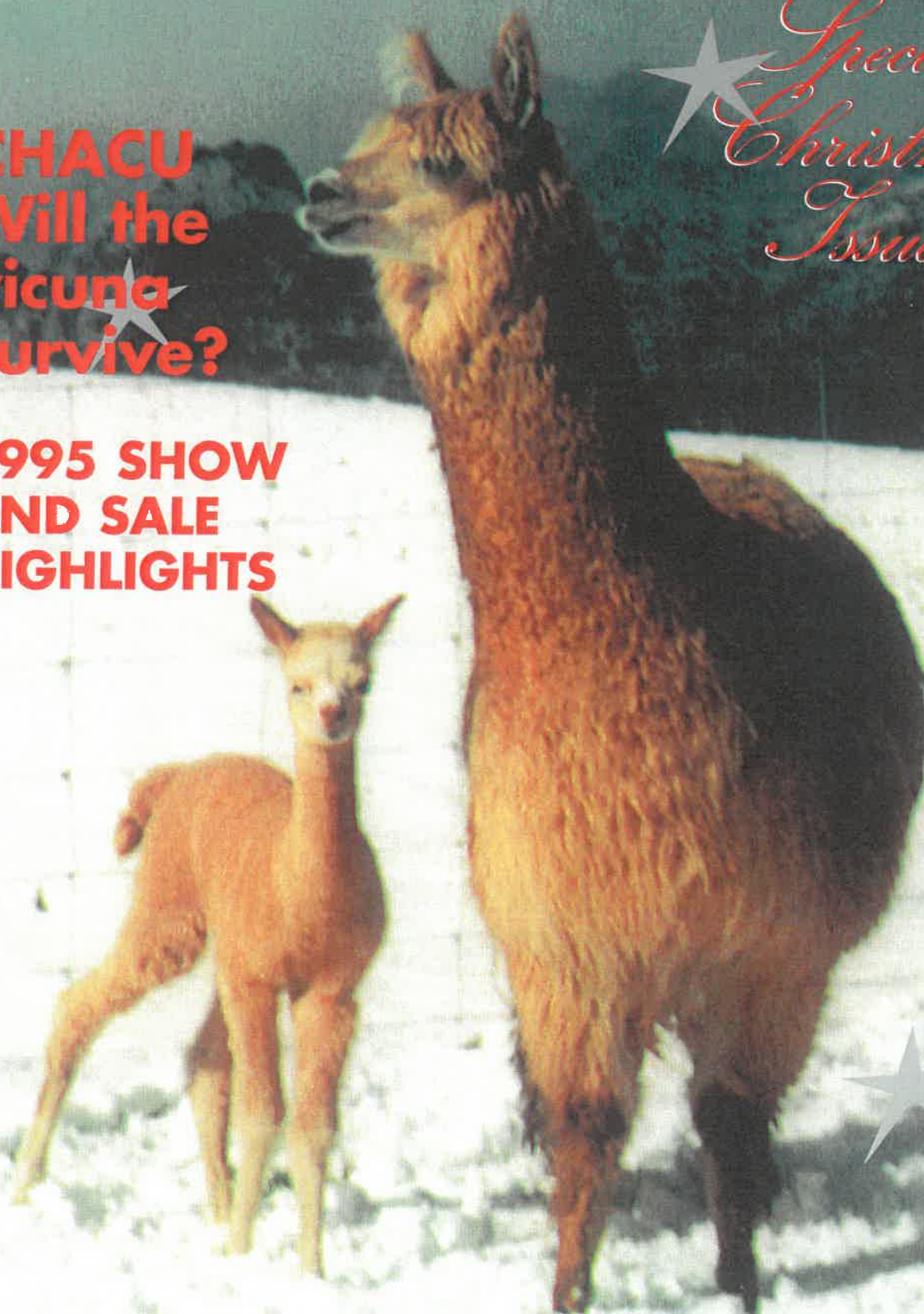
ISSUE No. 13 1995

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**CHACU**  
**Will the**  
**vicuna**  
**survive?**

**1995 SHOW**  
**AND SALE**  
**HIGHLIGHTS**

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Christmas  
Issue!*





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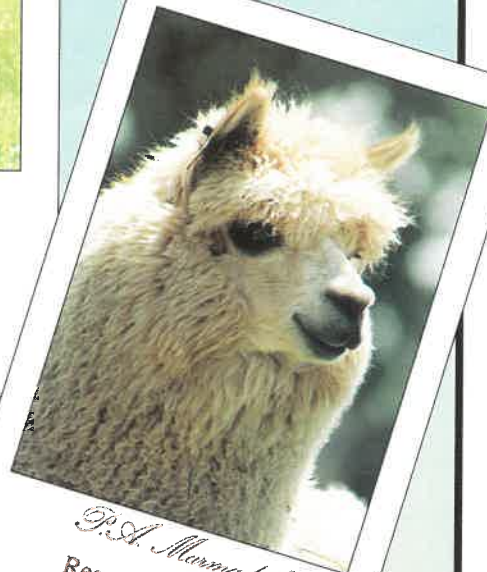


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## ADVERTISERS *index*

Acacia Alpacas .....	40
Acheron/Amberdale/Bethongabel .....	10
Akhira Pty Ltd .....	26
Amberdale Alpacas .....	9
Ancilf Alpaca Stud .....	48
Australian Alpacas .....	60
Banksia Park .....	23
Benleigh Alpaca Stud .....	3
Bethongabel Alpaca Stud .....	31
Bonnie Vale Alpacas .....	27
Calico Alpaca Brokers .....	35
Central Veterinary Diagnostic Laboratory .....	61
Champion De Crespigny .....	13
Coolaroo Alpaca Stud .....	4
Coricancha Alpaca Stud .....	32
Darfield Alpacas .....	50
David Rowntree Insurance .....	61
Eclipse Alpaca Stud .....	63
Eden Park Alpacas .....	43
Eykamp Kikuyu Company .....	52
Graianes Alpacas .....	52
Haldane Alpacas .....	38
Inca Alpacas .....	5
Jolimont Alpacas .....	55
Meadow Bank .....	19
Mulroyan Alpaca Giftware .....	50
Murrumbidgee Alpaca Stud .....	47
Pinjarra Alpacas .....	45
Pucara Alpaca Stud .....	44
River Ridge Alpacas .....	21
Royal Canadian Alpaca Ranch .....	24
Samarkand Alpacas .....	25
Sharpe Laboratories (Di-Vetelact) .....	18
Shanbrooke Alpacas .....	7
Southern Alpaca Breeding .....	42
Springlane Alpacas .....	40
Starwood Alpaca Farm .....	53
Warralinga Alpaca Stud .....	51
Windsong Valley Alpacas .....	15
Wilburtins .....	29
Wyona Alpaca Stud .....	37
Wyona Chipper (Sarah Harris) .....	41

# CONTENTS

<b>2</b>	<b>MESSAGE FROM THE PRESIDENT</b>
<b>3</b>	<b>IS THERE A THERMOMETER IN YOUR 'ALPACA KIT'?</b> <i>Carolyn Jinks thought she had a problem with her thermometer...</i>
<b>8</b>	<b>CROWN &amp; SCEPTRE ALPACAS, NOT FOR RETIRING TYPES</b> <i>Snapshot: Gordon and Noel Jones didn't buy a unit and play bowls!</i>
<b>11</b>	<b>CHACU</b> <i>Brought back from the brink of extinction, the vicuña may now survive</i>
<b>16</b>	<b>ALLELUYA ALPACAS!</b> <i>Highlights from the Association's 1995 National Alpaca Classic Show &amp; Sale</i>
<b>20</b>	<b>THE FIRST ALPACAS AT ROYAL ADELAIDE SHOW</b> <i>Another step forward for the industry</i>
<b>21</b>	<b>ALPACA FLEECE DEVELOPMENT</b> <i>Bruce McGregor's excellent paper from the AAA's 1995 Industry Seminar</i>
<b>40</b>	<b>BETTY WILLIAMS</b> <i>An equine artist who discovered alpacas</i>
<b>42</b>	<b>INSTINCT FOR SURVIVAL</b> <i>New breeders learn about a cria's will to live</i>
<b>46</b>	<b>TEAM TOPICS</b> <i>The first in a series of articles by Marty McGee</i>
<b>49</b>	<b>THE TWELVE DAYS OF CHRISTMAS</b> <i>A camelid Christmas carol</i>
<b>50</b>	<b>ALPACA FOR ALL OCCASIONS</b> <i>The A-Team in pictures</i>
<b>51</b>	<b>ALPACAS CHAPARRAL AND THE ARTIST</b> <i>Snapshot: Dee Finlay and Mark Short</i>
<b>50</b>	<b>PACAPICS...</b>
<b>52</b>	<b>VETERINARY CORNER:</b> <b>PREVENTING THE 'WINTER ALPACA SYNDROME'</b> <i>Dr Richard Potter BVSc, Healesville Veterinary</i>
<b>52</b>	<b>PERSISTENT PUPILLARY MEMBRANES</b> <i>Dr Rowan Blogg</i>
<b>58</b>	<b>BUSINESS DIRECTORY</b>
<b>62</b>	<b>AAA NOTES</b>
<b>63</b>	<b>EDITORIAL AND ADVERTISING DEADLINES</b>
<b>60</b>	<b>COMING EVENTS &amp; ORDER FORM</b>



# Message from the President

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Welcome to the AAA new year! The new National Committee is now well and truly up and running. On behalf of all our members, I would like to thank retiring committee members for their efforts. However, I am sure that Janet Sutherland, Roger Haldane, Peter Nicolas and Dougal MacDonald will continue to play an active role in the Association.

We are approaching a very exciting and challenging time in the development of our industry. The initial drive and enthusiasm of industry members have been the impetus for the extraordinary progress we have made so far. Now, it is time to channel our energies into consolidating our gains and forming a solid industry basis that will enable all members to move towards the 21st century with confidence.

To enable us to do this, we must make a number of decisions that are not only correct for today, but that provide reliable guidelines for decades to come. Perhaps, as 1995 draws to a close, it is appropriate for us all to take stock; to consider where we feel the industry should be heading; and what should be done now to achieve our ultimate aims. Remember, the Australian Alpaca Association belongs to its members and should reflect the ideals of all who see themselves as part of the industry's future.

I am pleased to report that the pilot fibre scheme is now well underway and we look forward to gaining a great deal of knowledge that should assist us in formulating the correct path for our growing fibre industry.

The second National Classic Show and fourth National Classic Auction



were held in Sydney on 11 and 12 November, 1995. The weekend was an outstanding occasion, organised by Graeme Dickson and his committee.

Maggie Krieger was presented with 141 animals from which to select a Grand Champion and there were 88 fleeces for Cameron Holt to judge for the Supreme Champion Fleece award.

There is no doubt that this year's Show and Sale reflect the maturing of our approach to promotional events of this nature.

In my last message, I commented on the role of women in the AAA. I am delighted to report that Carolyn Jinks has been elected President of the Victorian Western Region. I am sure that members of the region will profit greatly from her knowledge and leadership.

As we approach Christmas 1995, I wish all our readers, our members and their families all the best for the festive season. I hope that the holiday period is a safe and happy one for you all.

*Gray Morgan*

*Alpacas*  
AUSTRALIA

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# Is there a Thermometer in your 'Alpaca Kit'?

.....  
by Carolyn Jinks

*I am had not read the  
alpaca book that says cria  
should be born in day-  
light hours!*

Although it was not a freezing day, when we discovered him at daylight, a stiff breeze made the 'chill factor' quite strong.

The afterbirth was there and the proud mother stood looking at the scrap on the ground. We'll never know at what time he had arrived.

He was not shivering, just sitting with a vacant look, eyes half closed. Instinct warned that all was not well. As we lifted him to move him into shelter,



Dark Beauty rushed to the attack. No human was moving her baby!

While my husband, Allan distracted the dam, I lifted the cria. I realised



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just how cold he was and that his legs were all folded up and would not straighten.

We got the cria and mum into the shelter. But, as soon as the indignant dam entered the stable, she hindered every effort we made to help the cria — stamping, biting, squealing, she tried it all.

### How cold can a cria get?

First, we needed to know just how cold he was. Would you believe it? The thermometer wasn't working. Never mind, towel drying and massage should get a little stimulation going. (We left the head and tail areas alone so that the dam would detect her cria's natural smell.) On with a cria coat and in with 50 ml of warm glucose. He licked his lips, but no real sucking reflex had developed.

By this time, a friend had brought another thermometer. To my complete horror, no temperature registered. It was highly unlikely two thermometers were out of action. It looked as if we had a real emergency on our hands.

We got hot water bottles and put them in a box and covered them with alpaca fleece. Liam we had encased in two cria coats, each lined with alpaca. In the box, on top of the fleece he went and then was 'packed' in with more fleece up to his chin.

This natural insulation has proved successful on other occasions and provides a great use for spare belly and leg fleece.

Each hour, we monitored the cria's temperature. The first recording we obtained was 31.1°C. He also received an hourly spinal massage and then was lifted from his 'alpaca nest' for a brisk rub on the legs.

He was also given plasma. Can any serious breeder underestimate the necessity of knowing where this life saver can be found if needed?

Gradually his temperature began to elevate: 31.2°C, 31.7°C, 31.9°C. Each step upwards gave just a little more hope that he would survive.

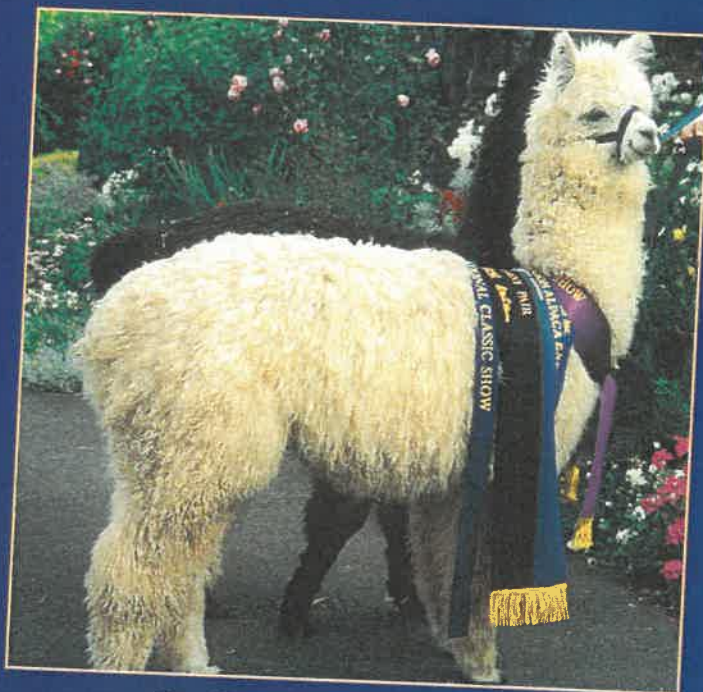
### Some 'caring' strategies

At 9.30 that night the cria's temperature reached 30°C. By this time, the dam had grudgingly accepted that she and I were destined to spend a lot of time together and she gradually began to murmur her approval. To help pla-

cate her, a companion animal had been brought into the stable — thank goodness for the 'sociable' wether. To anyone who doesn't have one of these invaluable animals, my advice is to obtain one forthwith!

During the first twenty-four hours, little Liam was fed Lectade and Di Vetelact every two hours. In all, he was given 700 mls of fluid (the quantity being gauged by weighing, using his birth weight of 7 kg as a basis). We used a small 'pet nurser' bottle with a

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joey teat. This teat we have found to be the best as the longer nipple reaches well into the mouth.

To ensure a weak cria is fed quickly and does not get its 'sucking satisfaction' from the bottle, I cut the end off the teat and gently squeeze the milk into the mouth. Invariably, when just fed, the cria will attempt to suckle the dam, more as the result of emotional need than hunger.

On the second day, the care pattern was similar, with the final feed at 11 pm. The cria's temperature was stable, but as yet, he made no resistance to being returned to his box and made no effort to get out or attempt to suckle.

The dam was constantly with him and slowly accepted my frequent visits that sometimes involved merely sitting and observing.

At each feed, the cria was encouraged to stand so that he would associate the two actions.

I sense the reader will be wondering why the dam was not being milked to supplement the cria. We did try, several times, but the resultant stress made it a useless exercise. All we managed to obtain were 40 ml.

### Watching the weight

Although he lost 400 gr in weight over the first three days of his life, the fourth day brought joy — a gain of 100 gr, and much more stability on his legs when he was being fed. As a result, during the warmer part of that day, Liam was kept out of the box and encouraged to stand up. At 2 pm he rewarded us with another milestone — a few tentative, wobbly steps to his mum.

From then on, it was a slow but steady climb. Before he was able to actually feed from the dam, he spent a lot of time licking and sniffing and this stimulated her milk production.

On the sixth day, we found he had gained weight but had drunk less



*Bottle feeding: teaching the cria to stand.*

from the bottle. Nature was taking over and success was in sight!

This is not the first time we have experienced the ability of a dam to feed a cria who has been unable to nurse until some days after birth. We believe this is linked to not parting the cria from the dam and feel that the humming of the dam stimulates the brain of even the frailest cria.

There is no doubt that there is no substitute for nature, although additional human care may mean the difference between life and death for a weak cria.

After eight days, Dark Beauty and her son returned permanently to the herd. Monitoring of weight continued, but no further supplementary

feeding was given. The goal of strengthening him sufficiently to suckle had been achieved.

At two weeks, Liam was as active as any other cria.

This animal will always have a special place in my heart, but already he prefers the company of alpacas to that of humans and this is the way it should be.

There may be some points in this story that will help save another precious cria. Always having on hand a thermometer; access to plasma; and bottle and teat may mean the difference between life and death. Hopefully, you'll never need to worry, but there's something to the old scouts' motto. 'Be Prepared!'

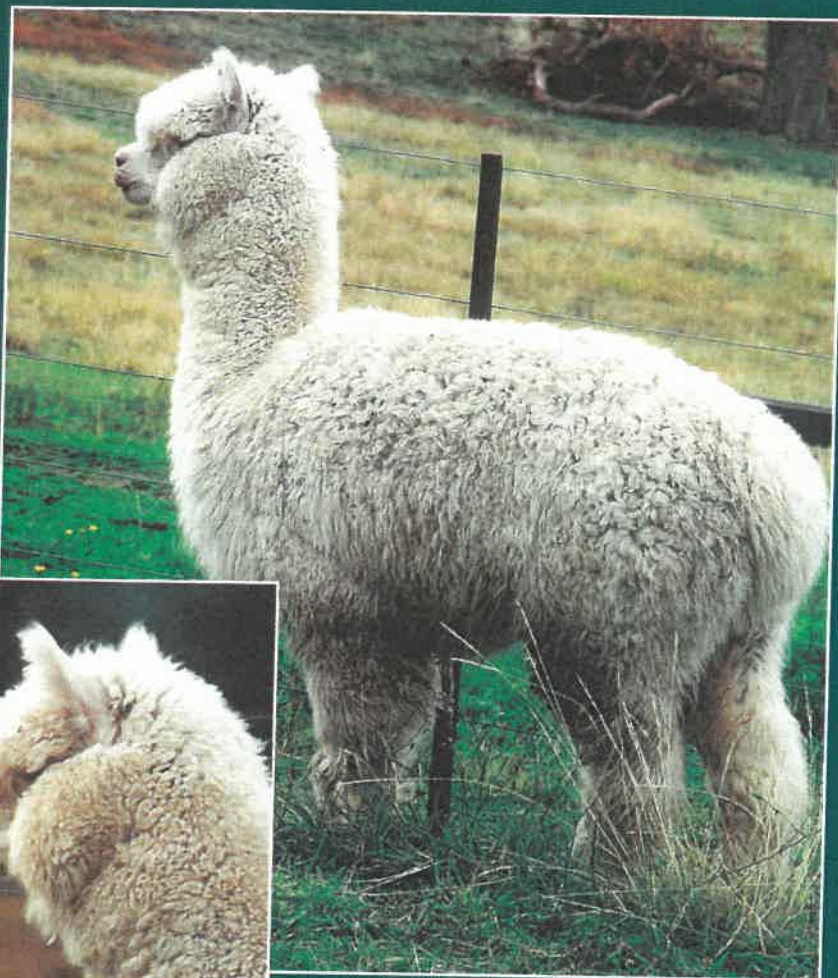


*Dark Beauty with Liam in his cria coat.*



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## Crown & Sceptre Alpacas — not for retiring types

by Noel Jones



'Alpacas! You're joking! What do you know about alpacas? Or about farming, for that matter? Now we know you're really going senile. Retired people buy a unit and play bowls.'

Such were the comments we received from family and friends when we made our decision to breed alpacas.

After forty years as a banker, Gordon had retired and we had moved from the confines of a city block to a house on ten acres in Cardigan, via Ballarat in Victoria

where, to all intents and purposes, he would have room to pursue his hobby of wood turning and I, gardening.

When I retired from teaching some twelve months later, I thought of putting the land to some use, but was not interested in cattle or sheep. Our windswept block was not suited to horticulture.

My interest in alpacas was sparked by seeing some at the inaugural Seymour Alternative Farming Expo and talking there with people from the industry. I then began to find all the information I could about them and dragged Gordon down to the Sheep and Woolcraft Show to see the alpaca section judging. I was getting really excited about the prospect of being involved in this industry, but Gordon

was sceptical. We had no experience in animal husbandry. However, when interest rates took a tumble and our retirement income was reduced by two-thirds, the banker in him took over and we finally decided to give it a go. Gordon was to manage the financial side and I was to deal with the animals.

We engaged a consultant for twelve months to help us with our original purchases and, within eight months, we had four pregnant alpacas on our land. We continued to gain as much information as possible, attending field days, seminars, shows and sales at every possible opportunity. I did the fibre course at the Melbourne College of Textiles.

For the first twelve months I relied heavily on our local vet for vaccinations, drenching, etc., but I finally plucked up the courage to do the injections myself, at first under his guidance. They have become routine now.

Gordon found himself totally involved with the animals, too. He trims feet regularly, feeds them, helps with halter training and talks to them several times a day, as he goes about the chores.

We have had some problems: an infected eye requiring drops three times a day; a difficult birth and a very premature cria (to mention some of our trials). However, we have coped without too much drama.



*Collingwood has a pedicure.*



At first, we felt rather isolated as we were the only breeders in our immediate area. But, with several herds now in the vicinity, we network and help each other out whenever we can.

Our herd has now grown from our initial four to eleven and we are about to start selling to realise some return on our investment.

Our first cria, from black parents, was a disappointment: excellent in all respects, except colour — a multi. Being black and white, male and useless, he was named 'Collingwood' and through the show circuit and promotional outings has become well-known in Central Victoria.

He is now a much-loved two-year-old wether and has been elevated to 'Sir Collingwood' having saved the lives of two cria by use of his blood donations for serum. Never underestimate the worth and usefulness of a good-natured wether.

Since entering the industry, we



*Campbell, grandson of Gordon and Noel Jones, with 'Gretel' at Crown & Sceptre Alpacas.*


have learnt a lot, met many, many interesting people and made new friends as a bonus.


We have been kept very busy. Gordon was Treasurer of Central Region, and through various activi-

ties, we keep in touch with the industry and try to give something back in return for the support we receive.


Age and lack of experience are no barriers to owning and raising alpacas. If we can do it, anyone can.

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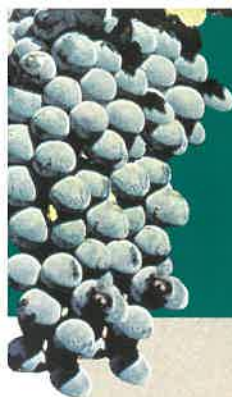
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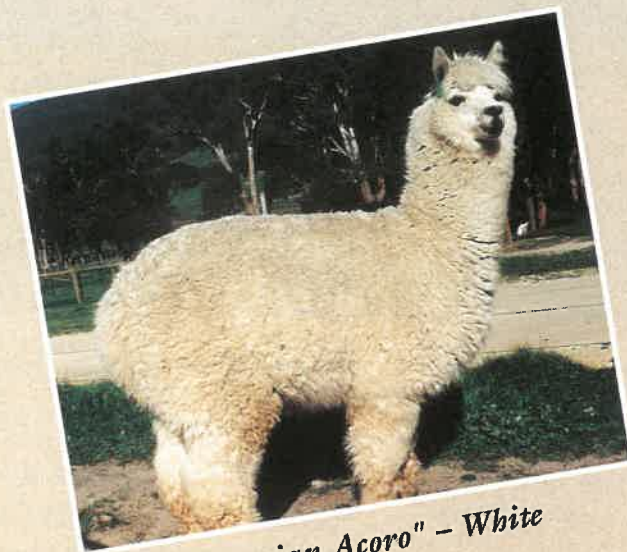
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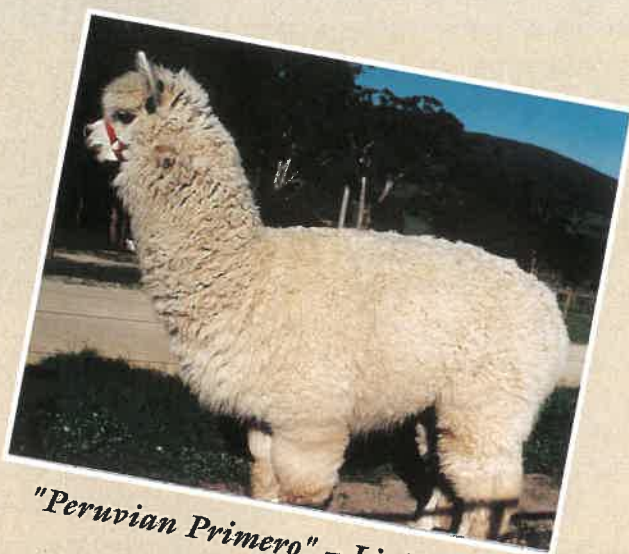


# PREMIUM PERUVIANS

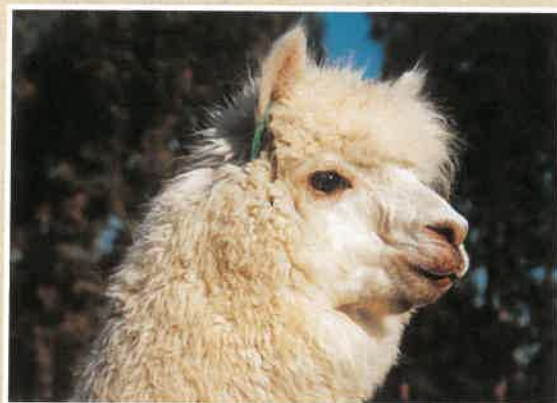
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*"Peruvian Poderio" - White*

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# CHACU

by Mike Safley

The wild vicuña stood rigid and still, a mere three feet away. Her round, ebony eyes mirrored the image of man — her mortal enemy for more than ten thousand years. She seemed to be simultaneously contemplating escape and submission. The cria stood boldly at her side, while the chacu swirled on around them.

Vicuñas are one of nature's most elegant creations, with long fragile necks and oversized heads that somehow suggest an extra-terrestrial intelligence. The coppery-golden colour of their fleece is punctuated by the long, silky, white hair found at their breast. This smallest member of the camelid family has the largest heart, by 50 per cent, of any mammal its size.

The hair of the vicuña is the world's finest natural fibre, measuring 12 to 13 microns. The cloth woven from its fleece is the world's most exclusive. The fashion houses of Armani and Chanel passionately compete for this rarest of natural commodities. An ounce of vicuña fleece, unprocessed, sells for five times more than an ounce of pure silver.

Why had this vicuña, standing an arm's length away, only recently been pulled back from the brink of extinction? Vicuñas and guanacos populated the western face of South America for hundreds of thousands of years, their numbers so large they were impossible to count. Then one hapless day, man appeared on the horizon and their numbers began a 10,000 a year retreat into the present.

The guanaco and vicuña hunters pursued their wild prey for more than 7,000 years before eventually domesticating them. The nomadic Selk-Nam Indians of Patagonia knew the guanacos well, often exploiting their natural curiosity by crawling on the ground to portray a wounded animal, then jumping up and driving a spear into the fatally attracted camelid.

The vicuña hunters of the Peruvian Puna led a sedentary life, living among the stationary families of vicuña. These Indians often hunted vicuñas by running them into man-made pits. Occasionally, a cria survived and they became the domesticated foundation stock of the modern day alpaca.

The Incas, and before them the Tiwanaku and Wari people, refined the practice of raising huge herds of llamas and alpacas, turning their fleece into fine cloth. The Incan rulers, with their gift for organising and governing vast territories, elevated the wild vicuña to exclusive status in the empire.

The Sun Kings forbade the killing of the vicuña. Instead, ceremonial hunts or, *chacos*, were held annually. These hunts were an enlightened form of conservation. Thirty thousand Indians would form a half circle, beating drums and chanting, as the vicuñas ran before them. With the human circle growing ever tighter, tens of thousands of vicuñas were soon surrounded.

The vicuñas were counted and the old and infirm slaughtered for their pelts and meat. The females, their cria and the best male specimens were shorn and released. Thus, the vicuñas prospered as the harvest of priceless fibre found its way to the Incan royal warehouses.

When the Spaniards arrived atop their horses, with visions of sheep and cattle in their heads, camelids, once too numerous to count, were slaughtered and disrespected. Previously unknown diseases were introduced into the native herds by the Spanish sheep and the population was further wasted.

In 1777, the Spanish colonists passed a law forbidding the hunting of vicuñas. However, the killing continued until there 'were almost none'. After Peru gained independence from Spain, General Simon Bolivar, Peru's first governor, issued many decrees dictating severe punishment for anyone who killed the fragile vicuña. The governments of Chile,



Bolivia and Argentina followed suit, but nothing stopped the rape of the vicunas. Their fleece was too valuable to allow them to live. Poachers prevailed.

### **Pampa Galeras**

The vicuna was finally declared an endangered species and, in 1965, the region known as Pampa Galeras in the Peruvian Department of Ayacucho, was designated as a national vicuna reserve. The project began with 16,000 acres and 1,000 vicunas.

Dr William Franklin came to Pampa Galeras in 1968 to embark on what would become the definitive study of vicuna sociology. He observed the vicuna primary social groups. He found families made up of six to eight females and one male, grazing 40 to 50 acres on a permanent basis and sleeping in adjacent, highly defined areas along the ridges overlooking their pasture.

These families, without fail, expel their cria annually. The banished males join nomadic herds of 25 to 50 male vicunas. They roam the lesser pastures of the puna until they acquire their own females and a grazing territory large enough to support their families.

The female, driven from her family, seeks admittance into a new family unit. Thus, nature avoids the perils of inbreeding. Each vicuna group occupies and defends an ecologically appropriate pasture, never overgrazing.

By guarding and expanding the reserve at Pampa Galeras, adding new reserves throughout Peru and curtailing commerce in vicuna pelts by use of the Endangered Species Act, Peruvian governments avoided the extinction of the vicuna. However, the poachers did persist and Shining Path guerrillas burnt out the Pampa Galeras complex. The long term future of the vicuna population was far from assured.

### **The conservationist capitalists**

In 1986, the Peruvian company, Grupo Inca, was labouring to create a plan that would preserve the vicuna. The people involved were no ordinary conservationists. Their roots were in alpaca textile manufacturing. Co-founded by Swiss and Peruvian families, the company is now headed by François Patthey and Fernando Corzo, providing a second generation of enlightened family leadership.

Grupo Inca is motivated by capitalism, but the soul of their company is driven by many conservationist pursuits. Projects that demonstrate its commitment to the landscape of Peru include the Manu Foundation and an internationally acclaimed book of the same name published in conjunction with the New York Zoological Society. Manu, a Peruvian rain forest located in the Amazon Valley, is recognised as one of the most significant ecological parks in the world. The company's recently published book, *Gold of the Andes*, depicts the history of South American camelids. Grupo Inca also operates the Sallalli Foundation, dedicated to the improvement of alpaca breeding in the Altiplano of Peru.

Fernando Corzo explained the essence of the Grupo Inca philosophy for saving the vicuna by reciting their battle cry, 'Shear a vicuna to save a vicuna!' He explained that 'no poacher is interested in shooting a shorn vicuna'. This concept, married to the Inca model of vicuna management, became the genesis of a unique plan to conserve the vicuna by organising its commercialisation.

Grupo Inca initiated a complex strategy that required the Convention of International Trade in Endangered Species (CITES) to reclassify the vicuna. CITES is an international body organised to regulate the trade and treatment of animals and their product between countries. Most countries



belong to the organisation and obey its rules. Changing the vicuna from an endangered species to an Appendix II animal would allow its fleece to be harvested and manufactured into cloth.

In 1986, Grupo Inca received permission from the Peruvian government to manufacture a cloth sample using fleece from the hides of dead vicunas confiscated from poachers. This cloth was presented to the International Conferences of CITES in Ottawa, Canada in 1987. As a result, Peru was granted permission to manufacture vicuna cloth so long as the fleece was harvested from live animals and manufactured in the country of origin.

For the first time in over 30 years, it became legal to sell vicuna products around the world.

This reclassification and new rules represented significant progress, but the most delicate problem of all remained — Peruvian politics. It was still illegal to harvest the fleece in Peru and ownership of live vicunas was



vested in the government. Long standing Peruvian law also made it illegal to export llamas and alpacas from Peru. All this was about to change.

### Albert Fuji Mori

Peru had just elected a new president, Albert Fuji Mori, a Peruvian of Japanese descent. He was an unknown university professor, specialising in agrarian economics, until two weeks before the election. A complex set of circumstances conspired to catapult Fuji Mori into the presidency. Peruvian politics, always byzantine, were now turned upside down.

The new president immediately set about rebuilding Peru. Decades of misguided laws and policies fostered by communist and socialist rule were swept aside.

The leader of the deadly Shining Path guerrillas, Ismael Guzman, was captured, dressed in striped pyjamas

for the world to see and locked in an island prison for life. After five years of Fuji Mori's rule, Peru is beginning to prosper. The story of the vicuna provides a micro view of how Fuji Mori has worked his magic.

In 1991, Peru passed an innovative new law to govern the management of all camelids. For instance, it became legal to export alpacas and llamas. The ownership of vicuna production was transferred from the government to the Campesinos (Indians) and their villages. A new government entity, the Council of National Camelids of South America (CONACS), was formed to manage camelid agriculture.

CONACS had the power to act but inertia set in and little happened until Fuji Mori became impatient, demanding action for the vicuna program, not more bureaucracy.

Dr Alfonso Martinez Vargas, a Quechuan, was born in Puquio, not far from Pampa Galenas and the vicu-

nas' heartland. He moved to Lima at age 13 and later studied law. He had been instrumental in the creation of CONACS.

Mori now appointed him its president. Under Vargas' guidance, the Indian communities joined together to form the International Society of Vicuna Breeders. Comprising over three hundred communities, the society represents all the villages with vicuna habitat in their vicinity. Through this new entity, breeders could collectively negotiate the sale of the fleece they inherited from their Incan ancestors.

All the elements for the commercialisation and conservation of the vicuna were now in place. Textile manufacturers from Italy, Japan, Germany and England all wanted a piece of the action.

Alfonso Martinez Vargas drafted a plan to hold an international competition for the right to buy the entire

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production of the Society of Vicuna Breeders. His aim was to obtain an agreement that would prosper his fellow Campesinos and have the potential to ensure the well being of the vicuna.

His plan required each bidder to include a plan and details of financing to enhance conservation efforts, as proof of each competitor's commitment to the long term future of the vicuna. He also required bidders to agree to up front payment of part of the finance offered for conservation purposes.

### **International Vicuna Consortium**

The competition was won by the International Vicuna Consortium of Textile Manufacturers. Condor Tips, joined by Lono Piana and Agronomo of Italy, submitted the winning bid of one million, three hundred thousand dollars; with one million dollars to be funded up front.

Now all that remained was ratification by the Vicuna Breeders Association at the upcoming National Congress of Vicuna and Camelid Producers to be held in June, 1995 in Puquio.

Alonso Burgos worked for four years on behalf of Grupo Inca to engineer the winning bid in the vicuna competition.

As he stood in the Puquio village square, flanked by flower beds full of red geraniums and bright blue benches full of people from around the world, he observed, 'You could travel throughout Peru year after year and find an event similar to this convention. Look around you... the poorest Campesinos have traveled thousands of miles to negotiate with the most influential of our society, everyone celebrating the vicuna.'

At the last minute, the Vicuna Breeders Society demanded changes to the contract. They wanted the right to

provide the labour from their own communities to dehair the fleece. Late into the night, Alonso, François (the Italian's lawyer) and Martinez laboured to renegotiate the contract. Finally, the agreement that contains the hopes and dreams of many people, was voted on and accepted by participants at this National Congress.

### **The Genius of the Deal**

The genius of the vicuna deal lies in the portions set aside for management and administration. The Indian communities now have the financial means and the motive to combat poachers.

The current contract, which extends another five years, calls for the production of 2,000 kg of fleece annually. Approximately 9,000 vicuna will be shorn, making each one of them worth about US\$144 annually to the campesinos. A significant sum of money in the high sierra, but not much in the world of high fashion.

Vicuna will never be a major profit centre for Condor Tips or the Italian textile firms. A vicuna fleece weighs about 220 grams, or less than one-half pound. It takes one person a week to dehair the fleece. Once it is washed, there are only a few ounces left. The total annual production of cloth will probably not exceed 2,000 square meters: enough to fashion a few wonderful coats, shawls and scarves.

The ultimate value of the contract to the International Vicuna Consortium lies in the luxurious image of being the sole source of the world's rarest fibre.

The vicuna and its keepers are the true beneficiaries of this unique plan for ecological sanity.

If the Society of Vicuna Breeders maintains its solidarity, purges the poachers and continues on the path set for them by Grupo Inca and the lawyer from Puquio, there will be a



*Dehairing the vicuna fleece — one hair at a time.*

way for the vicuna to co-exist with humans and to securely multiply.

Today, the vicuna standing just a few feet from her traditional enemy, man, will be shorn and released unharmed.

The vicuna has brought Italians into Peru and caused them to deposit cash into the coffers of the small Andean communities. The vicuna has created for the villagers and their leaders a link to the outside world.

President Mori has come down hard on the poachers. Poaching attracts a prison sentence of 15 years, the same punishment as for a terrorist. In a Peruvian prison, this is a life sentence.

With the signing of the contract, he has achieved on several levels. As a politician, he understands that 70 per cent of Peruvians are Indians. As an economist, he understands the importance of a few million dollars funneled into one of the poorest regions of South America. As a conservationist, he has immeasurably helped the vicuna.

### **Chacu**

The reserve at Pampa Galeris, once home to Dr Bill Franklin's research, is now rebuilt. A museum dedicated to



the vicuna is being completed. New fences are everywhere, built to form the capture pens of this modern-day chacu.

The Indian's faces are alive. Banners identify communities from Puno, Macusani and Cusco.

Thousands of men, women and children are forming the human wall that will encircle the vicuna.

On the ridge overlooking Pampa Galeris is a line of men. The vicuna are running, relying on their speed to rid themselves of their pursuers. Fifty, then a hundred race for the valley's end, a human wall forming at their rear.

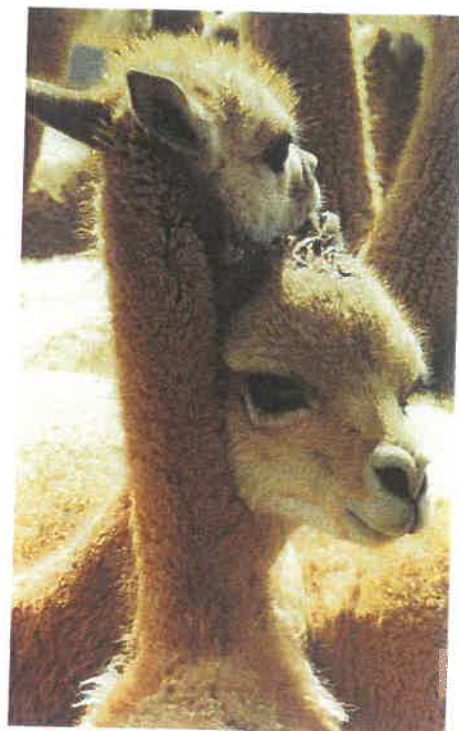
The herd grows to five hundred by the time they enter the fenced collar. Escape routes are sealed off with black netting. The vicunas are herded into ever smaller catch pens, finally standing only a few feet away from their pursuers.

There are traditional rituals, speeches and then shearing. Few, if any, animals are harmed. Once shorn, they are tagged, counted and released. Their absence of hair becomes a shield against poachers.

What will the future bring vicuna families roaming the Altiplano of Peru? Dr Bill Franklin is cautiously optimistic, although he worries about the politics of keeping over 300 Indian villages united.

'I'm impressed that these textile firms are spending such significant sums of money and insisting that the Indians are the direct recipients. Maybe, with enough money funnelled into vicuna management and protection, they will succeed. I certainly hope so.'

Mother Nature seems to be winning for the moment. The plan is sound: shear them to save them. With any luck, a growing population of vicunas will prosper.



*Caught in chacu, the vicunas await their fate. To shear and save is the strategy. Only time will tell if the organisation of the people involved in its implementation will be strong enough to make it work.*

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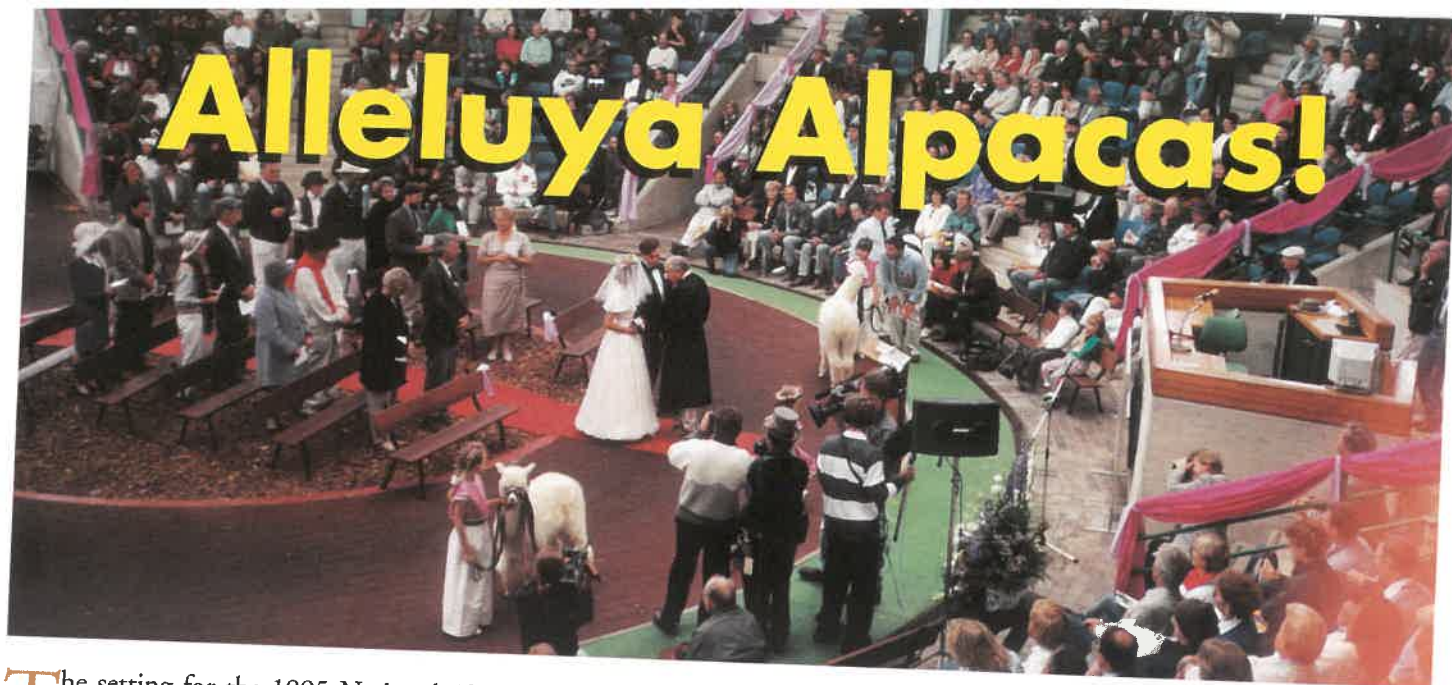
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SUPREME CHAMPION PAKENHAM DISTRICTS AHS 1995

CHAMPION SIRES STANDING AT STUD ALSO FAWN SURI STUD MALE





The setting for the 1995 National Alpaca Classic Show and Sale could not have been better. The William Inglis Newmarket Auction Complex is as practical as it is attractive. Set in the middle of Randwick, NSW, the complex provides an unexpectedly rural setting that is virtually minutes away from Sydney and the airport.

The show ring, with its paved parade circle allows animals room to move and to be displayed at their best. The view from any area of the tiered seating is excellent.

### The Show

In all, 141 alpacas were entered for the animal classes — not counting the final class, the 'Sires Progeny Group'. This was won by the progeny of Purumbete Ledgers Dream — three white alpacas that, to the untutored eye at least, resembled very handsome triplets.

Judging culminated in the Championship Awards held at 6 pm after a welcome half hour of champagne and light music.

Judge for the Show was Maggie Krieger from Canada. Her thoroughness was impressive, as was her stamina. She judged for over seven hours with little time to relax. The same must be said of Ring Steward, Dr Ian Davison who provided able assistance throughout the Show.

### Results — Animal Classes

#### Champion Wether

Tim, Cherry Hill Alpacas Stud

#### Champion Junior Male

Purumbete Brigantine, Benleigh Alpaca Stud

#### Reserve Champion Junior Male

Purumbete White Cockade, Southern Cross Alpacas

#### Champion Junior Female

Purumbete Wedding Bells, Benleigh Alpaca Stud

#### Reserve Champion Junior Female

Purumbete Romantic Dream, Shanbrooke Alpaca Stud

#### Champion Senior Male

Royal Canadian Ian Fleming, Wyona Alpaca Stud

#### Reserve Champion Senior Male

Shanbrooke Best Boy, Shanbrooke Alpaca Stud

#### Champion Senior Female

Mountain Forget Me Not, Caloola Alpacas

#### Reserve Champion Senior Female

No award

#### Supreme Champion Alpaca

Purumbete Brigantine, Benleigh Alpaca Stud



*Supreme Champion, Purumbete Brigantine, with Carolyn Jinks of Benleigh Alpaca Stud, after being sashed by Wendy Billington.*

### Results — Fleece Classes

There were a pleasing number of fleece entries — 88 in all — that kept judge, Cameron Holt and his team busy for most of Saturday. Fleece classes were held in the dining room and many visitors took the opportunity to examine the myriad of colours exhibited. The amount of effort on the day, and the necessary preparation, makes fleece judging a most exacting task and one that was performed most conscientiously by the team.



**Reserve champion, first fleece**  
Banksia Park Mariposa, Banksia Park Alpaca Stud

**Champion, first fleece**  
Lambert Lodge Coko, Acacia Alpacas.

**Reserve champion, adult**  
Purrumbete Spykato, Acadia Alpacas.

**Champion, adult**  
Suricaya Champagne Boy, Futura Alpaca Stud

**Supreme Champion Fleece**  
Lambert Lodge Coko, Acacia Alpacas.



Saturday night saw a large gathering for the dinner held in the dining room of the complex.

Talents hitherto undiscovered among certain diners as they were called upon for impromptu performances. Notable among these was

Maggie Krieger, who surely qualified for the title of 'Onorary Aussie' with an energetic didgeridoo obligato. The evening concluded, for those sufficiently energetic, with rock 'n' roll in the sale ring.

## Sunday

The day began with the public introduction of each animal put up for sale. Those wishing to find out further details on any animals were able to follow up with owners before the commencement of the sale.

## Alleluya Alpacas

This was the title of the curtain-raiser to the sale — a spectacular entertainment piece that began with the Dream Machine dancers and a great vocal performance by Melinda Schneider.

This was followed by a fashion parade with an excellent range of alpaca garments from Darfield Alpaca, Suave International, Capalba Park, Longreach Wools and the Australia Alpaca Centre.

'The Wedding Guests' was the title of the finale to the entertainment. Slowly, the 'pews' of the church were filled with wedding guests (all wearing at least one alpaca garment). Coincidentally, the guests bore amazing resemblance to various AAA members.

A hush fell over the assembled congregation as the strains of the Wedding March heralded the arrival of the bridal party.

Dressed in Australian alpaca (made from six white fleeces generously donated by World Class Alpacas) were the bride, bridesmaids and flower girl.

The outfits were designed by Margaret Hitchcock of River Ridge Alpacas. The fleeces were processed by Specialty Fibres in Adelaide and hand woven in Sydney. The bride's bodice was a blend of alpaca and silk and decorated with silk roses and ribbon. The



soft fall of the skirt was a testament to the natural beauty of alpaca — it was made of ropes of carded fleece (slivers), dropping freely from the waste and layered. The bride, Kelly Hitchcock (15) did great justice to her mother's design

Her five-year old sister Kirralyn was the flower girl who, along with the bridesmaids Samantha and Carly, were outfitted in felted alpaca blended with pink and crimson silk.

The auction was officially opened by The Hon. Tim Fischer MP, leader of the National Party. The audience was most appreciative of Mr Fischer's support for the alpaca industry. He referred to the 'second coming' of alpacas, after the 'bureaucratic error'





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The twins just after birth - Snugglepot and Cuddlepie. The alpaca with the bandaged leg, Cuddlepie on the left, had difficulty feeding and weighed only 4.3 kilograms.



The twins at 3 1/2 months - Cuddlepie weighs 16 kgs and Snugglepot 24 kgs- with Di-Vetelact being a major factor in their thriving good health

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that doomed the first herd, imported by Charles Ledger in 1858, to extinction. Had the industry been established at that time, he reflected, there could now have been an alpaca statutory marketing board, a pricing plan and a stockpile.

He saluted a 'great industry' — and we couldn't agree more!



Observant audience members would have seen Tim Fischer return to his seat, unwrap the presentation made to him by AAA president, Gray Morgan and place the Australian made, brown alpaca hat firmly on his head.

Auctioneer, Andrew Sloan of Wesfarmers/Dalgety made his way to the podium and the 1995 Classic Alpaca Auction was underway.

Total proceeds for the sale were \$528,000 with prices for the top quality animals generally around 5% higher than last year.

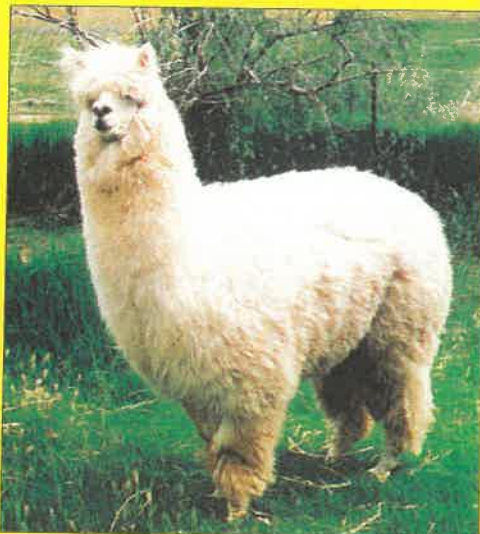
Tina and Tony Wheeler of Windsong Valley Alpacas, W.A. added two quality animals to their stud with the purchase of the top priced male and female. They were suri, Suricaya Paladin (\$29,000) and pregnant female, Benleigh Bronwyn (\$33,000).

Jason Miller of Creative Vision shot eight hours of video tape over the weekend. He is planning to edit the material into a one to two hour 'highlights' production.



*Tina and Tony Wheeler of Windsong Valley Alpacas are the proud new owners of Benleigh Bronwyn and suri, Suricaya Paladin.*

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# The FIRST ALPACAS at Royal Adelaide Show

This year was an exciting one for alpacas at the Royal Adelaide Show. The Association was represented by a stand in the 'Farming for the Future' pavilion, with animals on display every day and a roster of 64 enthusiastic members telling of the wonders of alpacas from 9 am to 8 pm.

On the Thursday at 10 am, the President of the South Australian Region of the Australian Alpaca Association, Peter Close, gave an opening speech about the industry to an interested crowd who had gathered at the Beef Cattle Arena. Then, the first Adelaide Royal Show judging of alpacas began. There were 34 alpacas entered into 8 classes and judge, Kevin Rubie spent much time and effort deciding the winners, before he explained to the audience why they had been chosen. For the first fleece classes, ten entries were received.

Once the judging was over and the animals had been sashed, TV crews and the press jostled forward to interview the owners of the winners and to gather all the animals for photos.

Although the weather was cool, hordes of people came through the sheep pavilion to view the alpacas and to study the fleeces that had been entered in the fleece competition.

## Results

### Champion Male Alpaca

Ambersun Remington, Ambersun Alpacas, A. Clarke

### Reserve Champion Male

Adelaide Sundance, Adelaide Alpacas, J. Lawrence

### Champion Female

Royal Canadian Chiquita, Royal Canadian Alpaca Ranch, P. Williams

### Reserve Champion Female

Chaparral Gypsy, Chaparral Alpacas, D. Finlay

### Grand Champion Alpaca

Ambersun Remington, Ambersun Alpacas, A. Clarke.



*Reserve Male Champion, Royal Adelaide Show 1995, Adelaide Sundance, with owner Julianne Lawrence.*

*Royal Adelaide Male Champion and Grand Champion, Ambersun Remington with owner, A. Clarke*



## Alpaca prize-winning stand

To highlight this first year of alpaca judging at the Royal Adelaide Show, the South Australian regional committee decided to have a stand made specially for the occasion.

Project manager Keith Barnett and wife, Trudi set about developing a concept for the construction. Trudy felt strongly that the stand should have a distinctly Australian flavour and this was the theme of the design conveyed to Trevor and Judy Pfeiffer of Serenity Park Alpacas. The stand took Trevor five days to build. Judy was responsible for developing the concept and fine-tuning the design.



The stand was built along the lines of a woolshed and constructed of corrugated iron, complete with a veranda and a beautiful Oregon display top. The pin boards, which also formed a back drop, were made from weathered corrugated iron with pin board inserts, covered with hessian. The 'view' from the false wooden window was a blown up photograph of grazing alpacas.

Decorated with hay bales, baskets of raw fleece and gum leaves, the stand was a picture of Australia. A mannequin was used to display alpaca garments, alpaca videos were shown and live alpacas were penned and on display beside the stand.

The exhibition won the second runner up award in the ANZ best rural exhibit competition.



# Alpaca Fleece Development and Methods of Assessing Fibre Quality

by **Bruce McGregor**

*A reprint of the paper  
given at 'Cria to  
Criation', the Association's  
1995 International  
Industry Seminar*

This paper defines the major quality attributes of alpaca fibre (fibre diameter, fibre length, fibre colour, contamination and incidence of medullated fibres). The development of alpaca fleece and skin follicles is then discussed. The connection between the evolution in the textile market and alpaca fibre quality are discussed particularly in regard to fibre diameter variability. Suggestions on the methods of assessing fibre quality in the shearing shed, in the laboratory and in the office are made. Preliminary data from a survey of Australian alpaca fleece quality are presented along with some examples of fibre diameter and medullated fibre

histograms produced by measurement on the optical fibre diameter analyser (OFDA). The paper concludes with a brief discussion on the main management and environmental effects on alpaca quality.

## Introduction

What are the major quality attributes of alpaca fibre? What are the connections between alpaca fleece development and fibre quality? How will fibre quality affect marketing of alpaca textiles? What are the methods of altering production and management of alpacas to maintain the production of quality fibre? These and many

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"Purumbete" Peter Pan

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more questions can be asked about producing quality alpaca fibre.

This paper also briefly refers to progress results from research I am undertaking on alpaca fibre quality in Australia (in collaboration with the South Australian Department of Primary Industries with support of the Rural Industries Research and Development Corporation). The paper also briefly mentions the main issues by which producers can influence the quality of their fibre. The paper does not discuss visual assessment, which can be of commercial importance when selecting animals and in assessing alpaca fibre. But first we need to define the major quality attributes of alpaca fibre and the relationship between alpaca quality and fleece development.

## Quality Alpaca Fibre

The major quality attributes of raw alpaca fleece have been defined by processors and markets for many years.

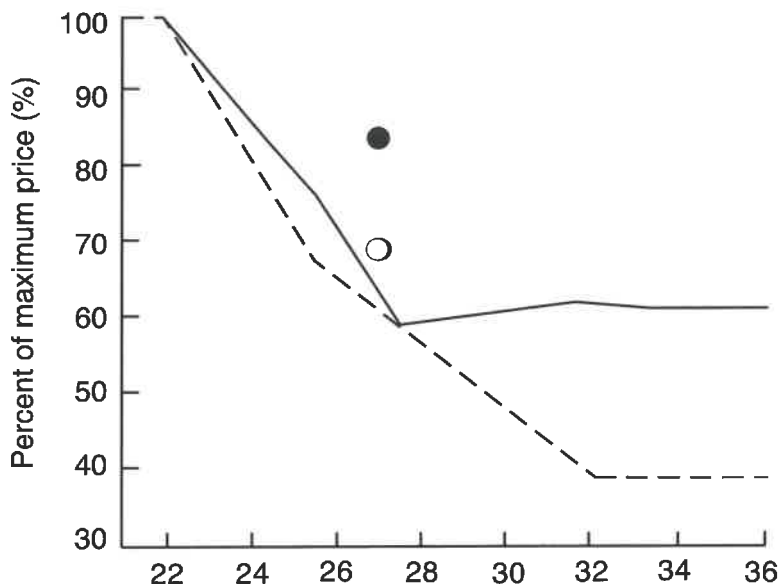
They include, in order of importance:

- fibre diameter;
- fibre length;
- fibre colour;
- freedom from contamination (vegetable fault, man made fibres);
- degree of medullation.

Each of these quality attributes affects directly the speed of processing, processing yield and yarn quality.

## Alpaca fibre diameter

Maximum prices are paid for fine 'baby' alpaca up to mean fibre diameters of 22  $\mu\text{m}$ . I have calculated the relative prices received for alpaca fibre based on values reported by Vinella (1993), see Figure 1. Prices decline rapidly above 22  $\mu\text{m}$ , with an average decline in price of 7% per 1  $\mu\text{m}$  increase in fibre diameter up to 27.5  $\mu\text{m}$ . In some years prices stabilise



**Figure 1: Alpaca fibre diameter ( $\mu\text{m}$ )**  
The effect of alpaca fibre diameter on the relative price of white alpaca tops in 1983 (—) and November 1993 (---). The relative value of 27  $\mu\text{m}$  Suri tops is also shown (1983 ○; 1993 ●). Data calculated by author from values cited by Vinella (1993).

above 27.5  $\mu\text{m}$  but in other years the prices decline further so that 32  $\mu\text{m}$  fibre was valued at only 38% of the value obtained for the finest fibre. At 27  $\mu\text{m}$  Suri fibre received a premium of 10 to 25% above the prices paid for standard adult white alpaca.

Recent reports are that the total 1994/95 Peruvian clip, estimated at 5.5 million kg greasy, is made up from 93% Huacaya and 7% Suri, comprising 7% baby alpaca, 53% fleece, 30% coarse and 10% mixed pieces (Morales *et al* 1995). It is easy to see that the finest fibre (baby alpaca) is only a small proportion of the supply.

When a constant number of fibres is maintained in the cross section of the yarn, increasing fibre diameter reduces the potential speed during spinning, as yarn breakage increases. Increasing fibre diameter is likely to increase yarn hairiness and irregularity and, in fabrics, increase the severity of wrinkles and reduce the recovery from wrinkling. Increasing fibre diameter increases the flexural rigidity of fabric and increases the air permeability of fabric. Some of these characteristics

can be modified depending on the finishing process (Leeder *et al* 1992).

## Alpaca fibre length

Alpaca from Peru has traditionally been classed into lengths of > 7.5 cm for worsted processing with shorter fibre being sold for the woollen processing system. Length commands a premium in the market. Markets usually discriminate against length to a lesser degree than against fibre diameter.

Worsted length alpaca increases the potential methods of processing the fibre and so increases the numbers of potential purchasers of the fibre. During worsted processing, the spinners use combing to select the longer fibres to enable them to spin finer and stronger yarns for weaving. Increasing the length of alpaca fibre increases the spinning potential and reduces the number of potential yarn breaks. Fibre length affects yarn construction.

## Alpaca fibre colour

Generally white fibre brings the highest prices as it can be dyed to any shade, especially pastel colours. Pastel



dyeing can be undertaken at lower temperatures which results in less damage to the fibre thus maintaining better 'handle' or softness. Japan mainly buys white fibre (Morales *et al* 1995). Dyeing is avoided if natural shades are used. The fawns are very popular when 'camel' is fashionable and when vicuna is in demand with prices 15% greater than white (Vinella 1993). Black is often preferred for worsted processing if the woven fabric is intended for dark suiting (Ross 1988) and can be sold at a 15% premium over white fibre. The effect of price on production can be seen in the Puno area of Peru where the number of coloured alpacas has fallen from 60% to 30% over the past 30 years (Renieri 1994).

### Contamination and grease

Vegetable matter (grass seed and burrs), urine and dung stains, in alpaca fibre incur serious price penalties of 50% or greater. These faults require carbonising which reduces the lustre, the handle and affects the colour of fibre. White fibre is most affected because heavy scouring and carbonising produces creamy coloured fibre which requires bleaching to restore the white colour. These treatments restrict the use of contaminated fibre to lower priced end uses and increase the processing costs. Soil contamination is common as alpacas are in the habit of dust bathing. Heavy soil and grease content requires longer scouring and increases costs per unit of clean fibre.

### Medullated fibres

Medullated fibres have a central canal or medulla which is largely hollow because the cells contain air. Fibres with a medulla reflect light differently to true fibres, are stiffer and are difficult to control in spinning and so become conspicuous in fine worsted materials. Stiff medullated fibres pro-

jecting from yarns may also cause prickly sensation on the skin and so reduce the comfort properties of garments containing medullated fibres. Medullated fibres usually grow from primary skin follicles but a proportion of secondary follicles grow medullated fibres. There are different types of medullated fibres found in alpaca fibre: kemps and hetero-type or gare fibres.

*Kemp fibres* are visible to the eye. The diameter of the medulla in a

kemp fibre is more than 60% and up to 90% of the diameter of the fibre, although the tip may be solid. Kemp fibres are brittle, non elastic and usually oval or kidney shaped in cross section. They are found on the face and legs of alpacas and around the edges of the main fleece. Kemps are more common in llama fibre.

*Hetero-type or gare fibres* are an intermediate type of fibre consisting of medullated sections and non medullated sections. Some reports

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refer to fragmented, interrupted, partially or continuous medullated fibres, or non kemp medullated fibres. These descriptions are for fibres which contain continuous or sections of medulla which are less than 60% of the diameter of the fibre. Hetero-type fibres are longer and more difficult to remove during processing.

Medullated fibres increase processing costs and reduce the yield of processed tops as many coarse medullated fibres are removed during carding and combing. A high degree of medullation can restrict the use of the top as these fibres cause too much prickly in garments worn near the skin.

Research with mohair suggests that the limiting thickness of solid keratin surrounding the medulla was 5  $\mu\text{m}$  and at 20  $\mu\text{m}$  there are no medullated fibres (measurements of alpaca fibre in our laboratory suggest a similar situation exists for alpaca fibre). In mohair,

as fibre diameter of medullated fibres increases, the medulla diameter increases, and between 20 and 30  $\mu\text{m}$  all medullated fibres are hetero-type fibres, and above 100  $\mu\text{m}$  all medullated fibres are kemp.

### *Dyeing properties of medullated fibres*

The vast majority of studies have shown that the medulla substance in the medullated fibres dyed equally or to a similar shade to the solid portion of the fibre. The different appearance of dyed kemp fibres is solely due to the enclosed air causing different reflection and transmission of light. Dye exhaustion curves for kemp and mohair have been reported as being little different for most dyes. Kemp fibres can be seen to various degrees depending on the colour and depth of shade to which the material is dyed (Hunter 1993).

## **Alpaca Fleece Development**

During the growth of the foetus the skin develops follicles from which the fibres grow. The first follicles to develop are called the primary follicles. The primary follicles in sheep and goats are usually arranged in small groups but in alpaca samples studied in our laboratory the primary follicles were mostly in 'groups' of one.

Later in pregnancy secondary follicles develop around the primary follicles. The birth coat contains a high proportion of fibres growing from the primary follicles and during the first months of life most of the secondary follicles begin growing fibres, so that by the fourth month of life the fleece is mainly composed of fibres growing from the secondary follicles.

Alpaca fibres are elliptical in cross section with the major axis being 15 to 30% greater than the minor axis. For example, a fleece may have a mean

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fibre diameter of 28  $\mu\text{m}$  with the mean diameter of the major axis 32 $\mu\text{m}$  and the mean diameter of the minor axis 26.2  $\mu\text{m}$ . The ellipticity of the fibre affects processing performance and fabric behaviour.

The fibres growing from the primary follicles usually have a greater mean fibre diameter than the fibres growing from the secondary follicles. These primary fibres are often referred to as guard hair. Among the 4 llama species, the vicuna and the guanaco have the fleeces where the guard hairs are predominant. The guard hairs in vicuna are impurity fibres in textiles and must be removed by special processing called dehairing.

Dehairing, which costs about \$US 25/kg (McGregor 1994), leaves the finer downy vicuna, grown from the secondary follicles, with a residual guard hair content of usually less than 1%. For dehairing to be successful,

the distribution of fibre diameters of the guard hairs and the downy undercoat must be separate and not overlapping. In real life this has meant that the fibre diameter of the guard hair must be approximately 4 times the diameter of the finer downy undercoat to enable the machinery to physically separate the coarse and fine fibres. For vicuna, the downy undercoat has a mean fibre diameter of about 13  $\mu\text{m}$  and the guard hair must have a fibre diameter greater than 50  $\mu\text{m}$  for dehairing to be successful. Animals with this type of fleece are known as 'two coated' and include cashmere goats and yaks.

During the past 5000 years of domestication, selection of the alpacas has seen the guard hairs become finer and the downy undercoat become coarser so that alpacas are now 'single coated'. The fibre diameter distribution of the medullated fibres (the

residual guard hair from the primary follicles) now overlaps with the fibre distribution of the finer secondary follicle fibres. In all of the Australian alpaca samples I have studied the distribution of medullated fibres is at the coarsest end of the fibre diameter distribution (see Figures 3 and 4).

### S:P ratio and follicle density

With animals growing wool fibres it is common to refer to the ratio of secondary to primary follicles as the S:P ratio. In alpacas the S:P ratio has been reported as 7:2 (Martin and Gaitan 1969). Studies at my Institute of skin sections from South Australian and Victorian properties have indicated S:P ratios ranging from 4:1 to 9:1 (Cotton unpublished).

With most alpacas, almost all of the fibres growing from the primary follicles are medullated and many of the fibres from the secondary follicles are

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medullated. Thus even if only primary follicles were medullated an animal with an S:P ratio of 9:1 would have 10% of the fibres medullated. We have seen animals with almost no medullated follicles.

The density of follicles can also be measured. Escobar (1984) cited two reports where the follicle density of alpacas ranged from 15 to 20/mm<sup>2</sup>. As the alpacas grow the density of follicles will decline as the area of skin increases. This decline in density of follicles as the animals grow is associated with an increase in mean fibre diameter.

### **Alpaca Fibre Quality and The Textile Market Evolution**

While alpaca fibre has been used in the western textile industry for about 140 years, considerable changes in consumer lifestyle have occurred during the past 30 years. It is important to

understand that alpaca is a 'wool' fibre, and in the 'western' world is mainly processed and marketed by business whose main focus is on wool fibres. Alpaca is commonly blended with wool with alpaca representing 25% to 80% of the fibre. The following information is based on extensive research conducted by the wool industry.

### **Clothing Evolution 1950-2000**

During the 1950s, formal tailored clothing represented the main clothing market. By the 1990s, casual and sports/active clothing were of similar importance to formal tailored clothes. Within 20 years, it is expected that casual clothes will dominate with formal tailored clothes representing a smaller proportion of the market than sports active clothing. There have been large changes in the way people travel (more cars, less public transport) and central heating is usual in homes, work places and in transport.

Clothing styles have changed with greater emphasis on easy care and wash and wear fabrics and consumers wear less underclothing resulting in outer garments being worn closer the skin. The emphasis on warmth in clothing is less but the emphasis on comfort is greater. Some of these changes are advantageous for alpaca fibre while others are not. Of greatest concern is the issue of comfort in alpaca textiles.

Surveys of consumers in the big 6 consuming countries of Japan, Germany, Italy, France, Britain and the USA have indicated that the most important negative attribute about wool clothing was prickle discomfort. New product development in the wool industry (IWS 1993) focuses on comfort, softness, lightness in weight, ease of care, retention of appearance and colour. Growth markets are in the smart casual, semi-formal, young casual and trans-seasonal markets.

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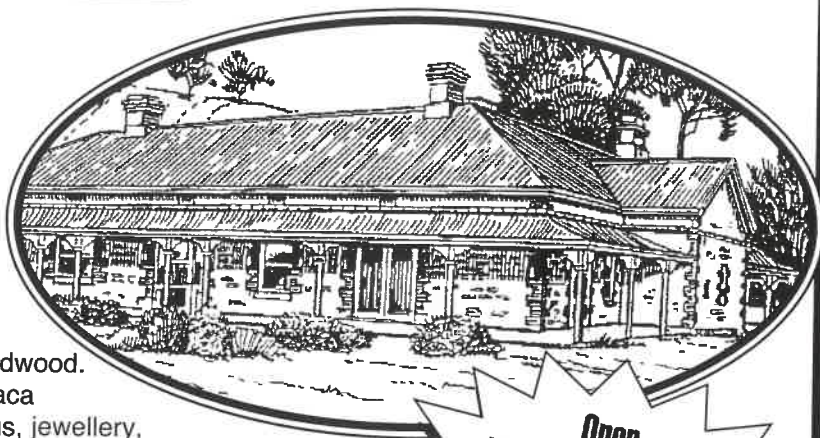
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### Fibre diameter, fibre diameter variability and prickly clothing

The wool and cashmere industries are very 'sensitive' about production of prickly garments. The trade definition for cashmere, having a mean diameter of less than 20  $\mu\text{m}$ , is to ensure no fibres in the fibre diameter histogram exceed 30 $\mu\text{m}$ . Indeed, in Australia, cashmere classification generally ends at 18.5 $\mu\text{m}$  as Australian goats appear to have a greater variability and spread of fibre diameters. Definition of both fibre diameter and fibre diameter variability are essential to ensure cashmere retains its soft luxurious handle.

The Australian wool industry also regards prickle discomfort as a major impediment to the use of wool, especially in the USA market. Wool lots with over 5% of fibres exceeding 30 $\mu\text{m}$  are classed as prickly. Surprisingly this includes about 35% of wool with a mean fibre diameter of 21  $\mu\text{m}$  and all wool lots with a mean fibre diameter of 24  $\mu\text{m}$  and greater.

Considerable effort is now focussed on reducing the mean fibre diameter and diameter variability in flocks with mean wool fibre diameters of 21 to 23  $\mu\text{m}$  (Dolling 1992). Italian spinners are known for their desire to purchase fine Merino wools with good handle and low CV%, usually less than 18%. This has enabled the production of fine, even, single yarns and smoother finishes to premium worsted fabrics.

Recent developments include the proposed use of measured 'spinning fineness' to indicate wool sale lots which have similar spinning and weaving performance and are similarly ranked for fabric prickliness (Dolling 1993). Effectively spinning fineness uses the coefficient of diameter variability (CV%) to 'adjust' the mean fibre diameter to better reflect the processing performance of wools.

Wools of greater CV% perform as though their mean fibre diameter is greater (Dolling 1993). At 22 $\mu\text{m}$ , for

each increase in CV% of 5% spinning fineness increases approximately 1  $\mu\text{m}$  (Table 1, see over) but at 35  $\mu\text{m}$  each increase in CV% of 5% increases spinning fineness 2 $\mu\text{m}$ .


Alpaca, with mean fibre diameters ranging up to 45  $\mu\text{m}$  also has a high CV% of fibre diameter. Peruvian alpaca fibre has an average CV of about 28% (data based on 4500 samples studied by Pumayalla and Levva 1987). Thus almost all raw alpaca,

except the very finest, has a considerable proportion of fibres greater than 30  $\mu\text{m}$ .

As mean fibre diameter increases to 24  $\mu\text{m}$  the % of fibres above 30  $\mu\text{m}$  increases to about 20%. Increasing CV% from about 30% to about 40% increases % of fibres above 30  $\mu\text{m}$  by about 4%. Alpaca garments and yarns are often brushed so that the softer brushed textiles are less likely to prickle and the fibres more likely to bend.

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Technology is presently available which can measure fibre diameter distribution quickly and cheaply. Thus discerning buyers of alpaca fibre and alpaca animals should be able to take commercial advantage of the difference between mean fibre diameter and spinning fineness provided spinning fineness information is available.

## Methods of Assessing Fibre Quality

As discussed earlier, the major quality attributes of raw alpaca fleece have been defined by processors and markets for many years. They include, in order of importance: fibre diameter; fibre length; fibre colour; freedom from contamination (vegetable fault, man made fibres); degree of medullation.

To this list I have added fibre diameter variation.

There are three stages in assessment of fibre quality and each stage is equally important. Messing up one of these stages results in the whole exercise being a waste of time.

The stages are:

- in the shearing shed;
- in the laboratory; and
- in the office.

### In the shearing shed

There are five important steps to follow when shearing alpacas.

#### (i) Correctly read and record the ear tag number

This sounds simple but in a hectic shearing shed with lots of noise, people, animals and fleece moving about, it is easy to forget to read the tag or to misread a tag. Near the end of a busy day when a visitor drops by and when you are a bit tired it is very easy to misread a tag. Ways to minimise errors are: to read the tags yourself and double check any shearer; to bring in a list of tags expected at shearing and check

Diameter ( $\mu\text{m}$ )	Co-efficient of variation (%)				
	18	24	30	36	42
22.0	19.7	20.7	22.0	23.5	25.1
25.0	22.4	23.6	25.0	26.7	28.5
28.0	25.1	26.4	28.0	29.9	31.9
30.0	26.9	28.3	30.0	32.0	34.2
33.0	29.5	31.1	33.0	35.2	37.6
35.0	31.3	33.0	35.0	37.3	39.9
38.0	34.0	35.8	38.0	40.5	43.3
40.0	35.8	37.7	40.0	42.6	45.6

**Table 1**

*Spinning fineness ( $\mu\text{m}$ ) for various combinations of mean fibre diameter and co-efficient of variation (calculated from Butler and Dolling 1995). The calculations assume the CV% of typical Australian alpaca is 30%.*

the read tags against expected tag numbers; and concentrate (don't talk to anyone).

#### (ii) Accurately weigh the fleece parts

Before shearing you must obtain or borrow a set of accurate scales for weighing fleece. The scales must weigh up to 5 kg, with an accuracy of 50 g. The scales must be able to hold a large cumbersome fleece without tipping over. The scales need to be placed on a large and level surface that allows the operator easy access and room to store record sheets, pens and sample bags. For electronic scales, a power point or extension lead is required. Record the fleece weight immediately it is weighed.

There are many ways to incorrectly weigh a fleece. Operators must ensure that the area near the scales is kept clean so the scales can operate freely without touching anything. Check frequently to ensure that the scales are zeroing or taring correctly and do not let the fleece hang off the scales.

#### (iii) Accurately sample the fleece

The current advice is to take a grid sample from the shorn saddle. The saddle is spread evenly over the fleece

table and a sample is randomly drawn from at least 16 places representative of the entire fleece. Some people prefer to use a grid made of mesh (squares 10 cm x 10 cm) and take a sample from each square.

The final sample must weigh 50 g. The sample is accurately and clearly labelled by placing a label with the tag number inside a plastic bag which is then sealed. Remember, if you take a dud sample then you will get a dud result. Test laboratories only test the sample you supply. Make sure you and your money are not duded!

#### (iv) Measure fleece length

Have a ruler to accurately measure the length of the fleece. Randomly take three staples from the saddle and measure to the nearest 0.5 cm. Record the length.

#### (v) Sort the fleece

The fleece parts need to be sorted or classed into the appropriate lines for sale. A marketing system is being developed for Australian alpaca fibre and the guidelines need to be carefully followed. It is likely that lines will be established for fibre diameter, colour, length, impurities and inferior



fibre types. Use the measurement of fleece length to determine the length category for your main fleece lines.

### **In the laboratory**

It is necessary to send your fleece sample to a fleece testing service for determination of mean fibre diameter, fibre diameter variation, incidence of medullation and washing yield. There are a large number of other measurements which could be made but they are not relevant for farm use.

#### *(i) Mean fibre diameter*

Fibre diameter is easily measured with modern equipment. Fibre diameter is expressed as micrometers ( $\mu\text{m}$ ). One micrometer is one thousandth of a centimetre and is often referred to as a micron.

The cheapest method of measuring mean fibre diameter is by the airflow method but mean fibre diameter can also be measured in laboratories with fibre diameter analysers (FDA), Laserscan or the optical fibre diameter analyser (OFDA).

#### *(ii) Fibre diameter variability*

Variation in fibre diameter around the mean diameter is measured by the standard deviation (SD). The smaller

the SD the less the variation around the mean. SD tends to increase as the mean fibre diameter increases so a better measure of fibre diameter variability is the co-efficient of variation (CV%). CV% measures the variation in fibre diameter relative to the mean fibre diameter. CV% is calculated by dividing the SD by the mean fibre diameter and then multiplying by 100. For example, if the mean fibre diameter is 25  $\mu\text{m}$  and the SD is 5  $\mu\text{m}$  then:

$$\begin{aligned}\text{CV\%} &= (5 \div 25) \times 100 \\ &= 0.20 \times 100 = 20\%\end{aligned}$$

The only economic methods of measuring CV% are in laboratories with FDA, Laserscan or OFDA. These modern machines are connected to computers and can easily measure, record and calculate the data from 5000 fibre measurements. The OFDA measures fibre diameters between 4 and 150  $\mu\text{m}$ .

#### *(iii) Incidence of medullation*

The incidence of medullated fibres is measured by number (% of fibres examined) or by weight (% w/w).

The only economic method of measuring the incidence of medullation is by the OFDA. The OFDA records the diameter of medullated fibres, and can calculate the mean

diameter of medullated fibres, the incidence of medullation by number and by weight. Histograms are also printed of the distribution of medullated fibres. Previously the projection microscope was used but this method cost about four times that of the OFDA. However the OFDA cannot accurately measure medullation of coloured fibres.

#### *(iv) Washing yield*

The fleece of alpacas contains impurities which include natural grease from the skin, dust, soil, dung, and vegetable matter like grass seeds. Some owners also apply coloured markers. The washing yield is calculated following a carefully controlled cleaning and drying procedure. A weighed, greasy, dirty fibre sample is converted into a clean, dry sample and reweighed. A standard allowance is made for moisture regain and the washing yield is expressed as a percentage (%).

The use of the washing yield is to calculate the clean fibre production from an animal.

For example, if the greasy fleece weighed 3.0 kg and the washing yield was 90% then the clean fleece production was  $3.0 \times 0.90 = 2.7$  kg.

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#### (v) Vegetable matter content (VM)

Special laboratories are required for determination of VM contamination. It is possible to determine the amount (%) and type of VM. Under most situations growers do not need to determine VM but selling agents need to determine VM. If VM exceeds 5% then special processing is required which can damage fibre characteristics.

### In the office

If test results are not carefully examined in the office then it is really a waste of time, money and effort taking the samples in the first place. The following issues are important.

#### (i) Interpretation of test results

When comparing test results to select and cull animals for breeding it is only valid to compare results between animals that have been grazed together in the same mob. Even then you may not be able to make a valid comparison. The test results are quite valid for selling fibre.

Why? Because there are a large number of environmental influences that can affect the fibre grown by alpacas. These environmental influences vary, even over a small property.

For example, soil types can vary over distances of 20 m resulting in different paddocks having different pasture growth, different mineral nutrition, and different levels of internal parasite contamination. Even within the same mob, you must only compare animals of the same physiological state. That means compare pregnant females with pregnant females; compare tuis with tuis; compare healthy animals with healthy animals; compare animals shorn in November with animals shorn in November.

It is very silly to use 'test results' to compare animals which have been brought in from another property or prepared for shows. You need to wait until all the animals (yes, yours and

the new arrivals) have been shorn and then grazed together.

When buying alpacas ask the seller to provide details of all the animals grazing in the mob, so that you can see the relative ranking of the animal you are interested in buying. If the seller says that they have only tested the animals they are selling, then you know that they really don't understand the benefits of testing all their animals. You could suspect that they do not know the relative merits of the animal they are selling. But, they may know the relative merit of the animal they are selling and they may be telling you a great big lie and be selling you a dud!

#### (ii) Graphing results

The simplest way of comparing animals is to graph the clean fleece weight against the mean fibre diameter. An example is shown in Figure 2. This example is based on a random selection of fleece measurement data collected during the first year of my study of alpaca fleece quality.

Once the data has been graphed, a line of best fit is fitted through the data. In this hypothetical example, let us assume that several cull animals

have already been excluded (animals 1, I and O) and that the fleece characteristics and live weight of the remaining alpacas are similar. Which are the best females? Which of these adult animals would you use and which animals would you cull?

- Which is the better animal, N, T, G, or H? Which is the better animal, 9, H, 12, or F?
- Which is the better animal, 7, W, G, or B?
- If you were going to cull 75% of these alpacas which 9 would you keep?

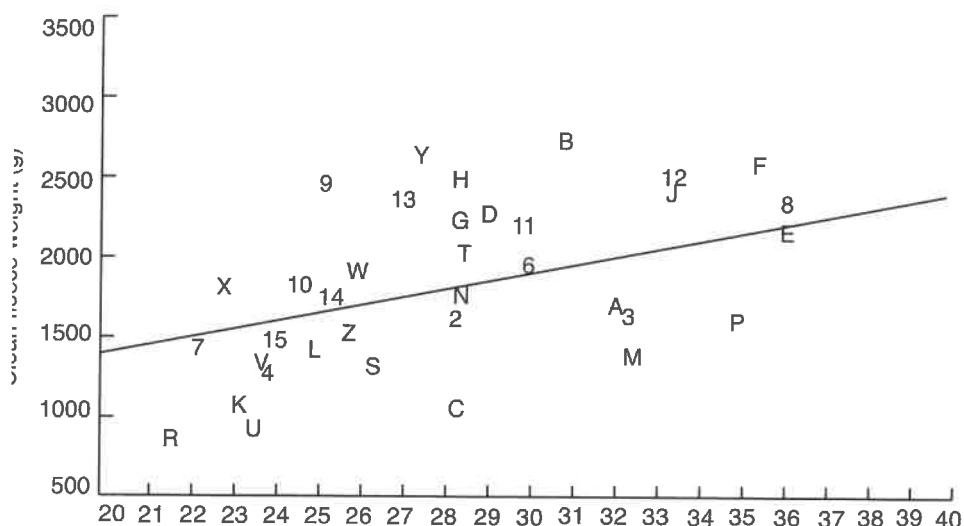
To make genetic progress more information is required. Genetic selection is briefly discussed later in this paper.

#### (iii) Keeping good records

Invest in a filing cabinet and other appropriate equipment to keep your records safe. Programs are available to store and process data on computer.

#### (iv) Interpretation of fibre diameter variability

The potential use of fibre diameter variability has been discussed in relation to spinning fineness. Ideally



**Figure 2 Mean fibre diameter ( $\mu\text{m}$ )**

*The relationship between clean fleece weight and mean fibre diameter based on a random selection of alpacas grazed in southern Australia (McGregor unpublished). Individual animals identified by letters or numbers.*



CV% needs to be reduced, not only to eliminate the coarse edge and the 'prickle factor' but to reduce the mean fibre diameter and to improve the processing performance of the fibre. What is the ideal CV%? Fine wool growers are aiming at 16% to 18%. Vicuna has a CV of 12% to 13% (Pumayalla and Levva 1987). These targets are too severe at current levels of production. Perhaps 20% is a more realistic target in the medium term.

Some people like to over interpret fibre diameter histograms, and read into the histograms all sorts of things. Apart from the data on CV% the only other information of any real importance is the shape of the histogram. While it may be ideal to see a perfectly symmetrical histogram, this shape is rarely seen. It is impossible for the follicles to grow fibres 4  $\mu$ m in diameter but they can grow fibres 50  $\mu$ m in diameter.

Histograms usually have a short 'tail' towards the greater fibre diameters, or in technical terms the distribution is skewed.

I examine histograms to see if the fibre distribution is 'bimodal' by trying to identify two peaks in fibre diameter distribution and to identify distributions with a very long tail. Some animals have one peak at, say, 22  $\mu$ m, representing non medullated fibres, and a second peak at say 30  $\mu$ m representing medullated fibres. The second peak predominantly represents fibres growing from primary follicles. Animals with bimodal histograms and long tails are undesirable in a breeding herd. See Figures 3 and 4 (see over) for examples from Australian alpacas of desirable and less desirable histograms (measurements made on the OFDA). In these histograms the distribution of medullated fibres is shown by the bolder darker bars.

Figure 3 shows four histograms from Australian alpacas. The example on the top left has a mean fibre diameter of 24.5  $\mu$ m, CV 24.8%, and medullation incidence of 6.8% w/w and the example on the top right has a mean fibre diameter of 26.7  $\mu$ m, CV 21.5%, and medullation incidence of 8.6% w/w. Both these histograms have good shape. The example on the bottom left has a mean fibre diameter of 26.1  $\mu$ m, CV 31.9%, and medullation incidence of 23.4% w/w and the example on the bottom right has a mean fibre diameter of 26.6  $\mu$ m, CV 27.3%, and medullation incidence of 44.3% w/w. Both these histograms have poorer shape with longer tails (coarse edge). The animal on the bottom left shows a slight tendency for bimodal distribution.

The three histograms in Figure 4 all have poor shape with long tails. The example on the top left has a mean



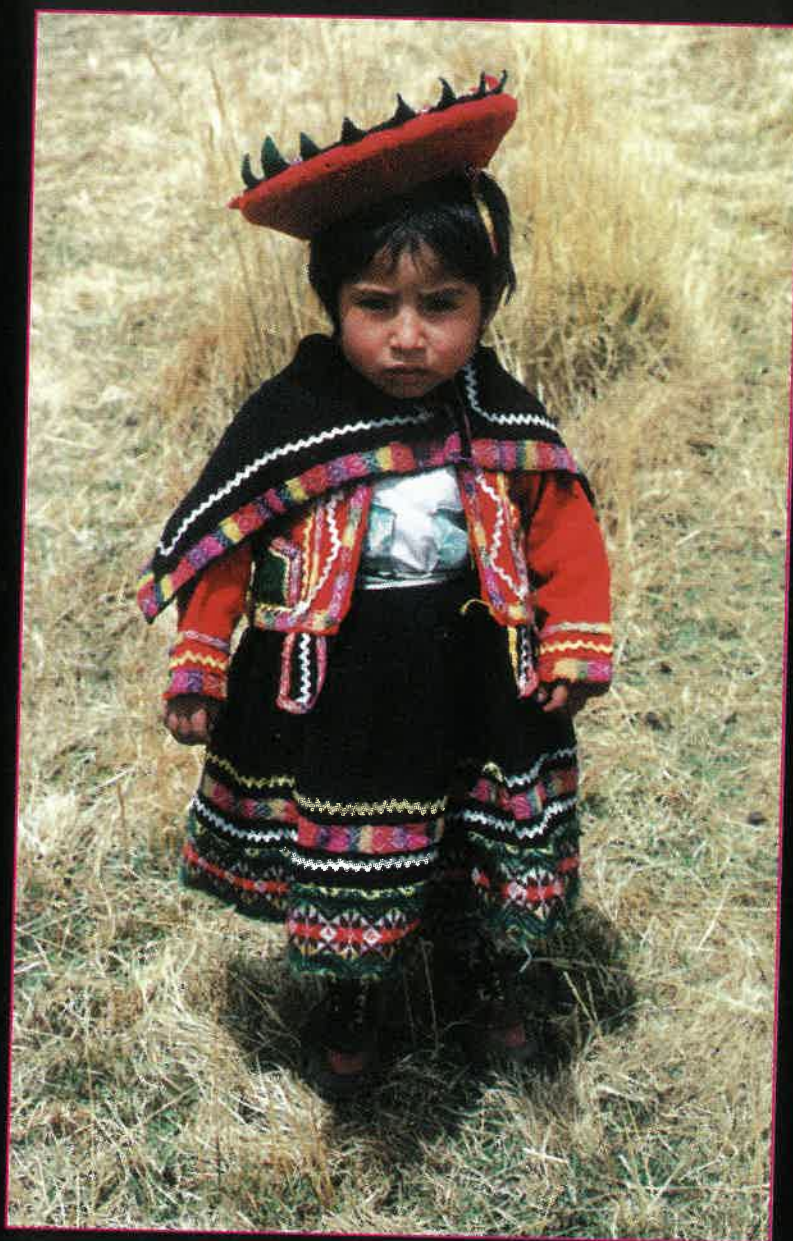
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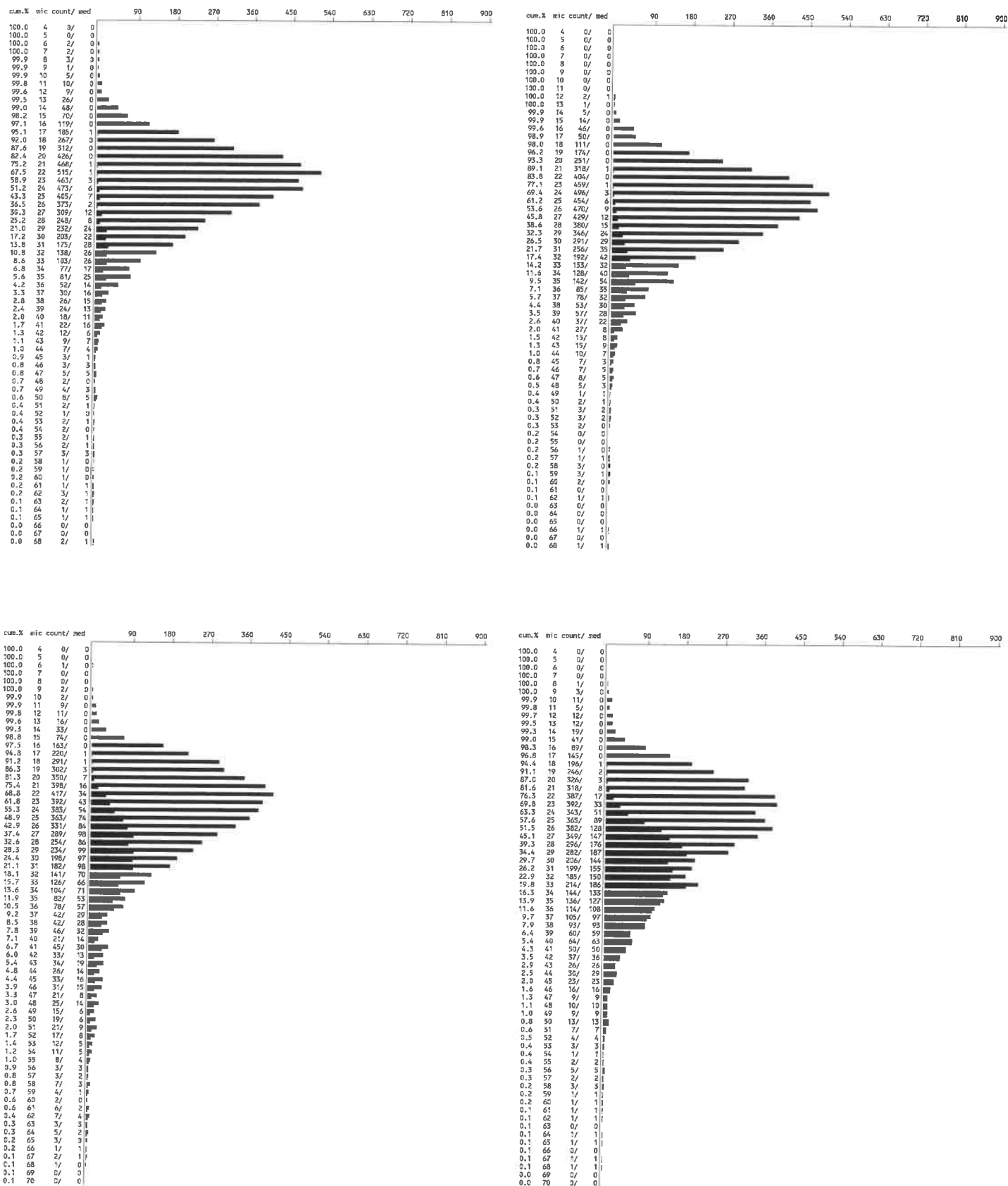


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**Figure 3**

*Examples of desirable and less desirable fibre diameter distribution histograms for measurements of alpaca fibre made on the OFDA. In these histograms the distribution of medullated fibres is shown by the bolder darker bars.*



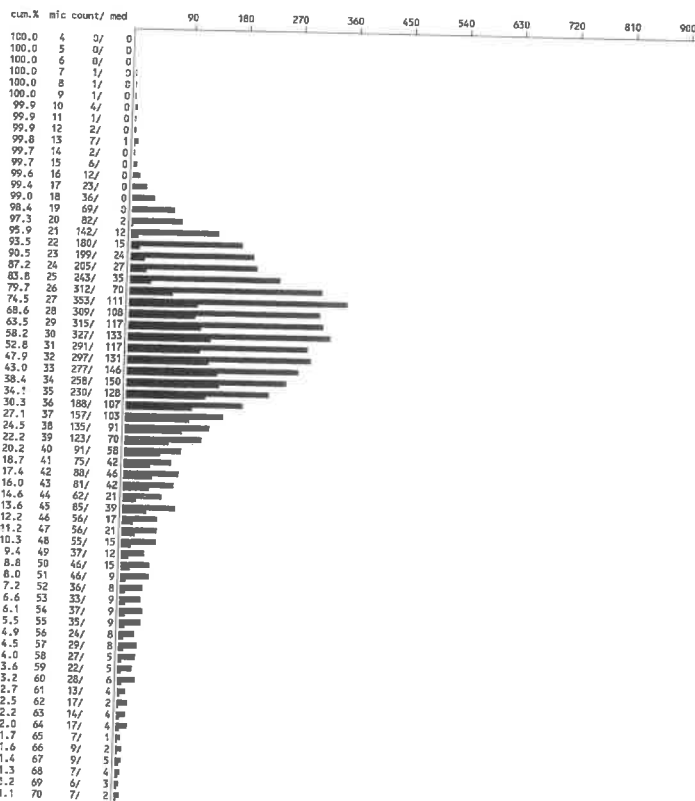
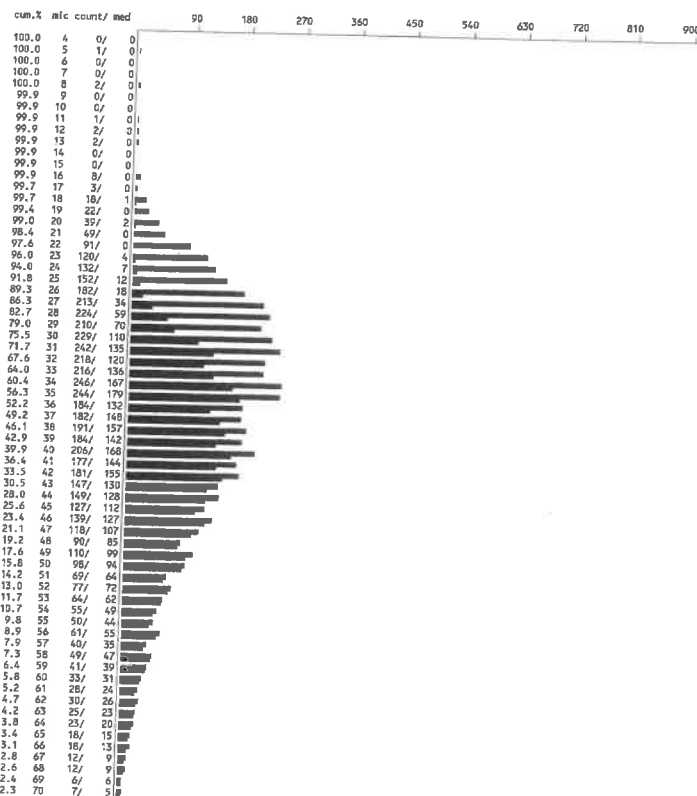
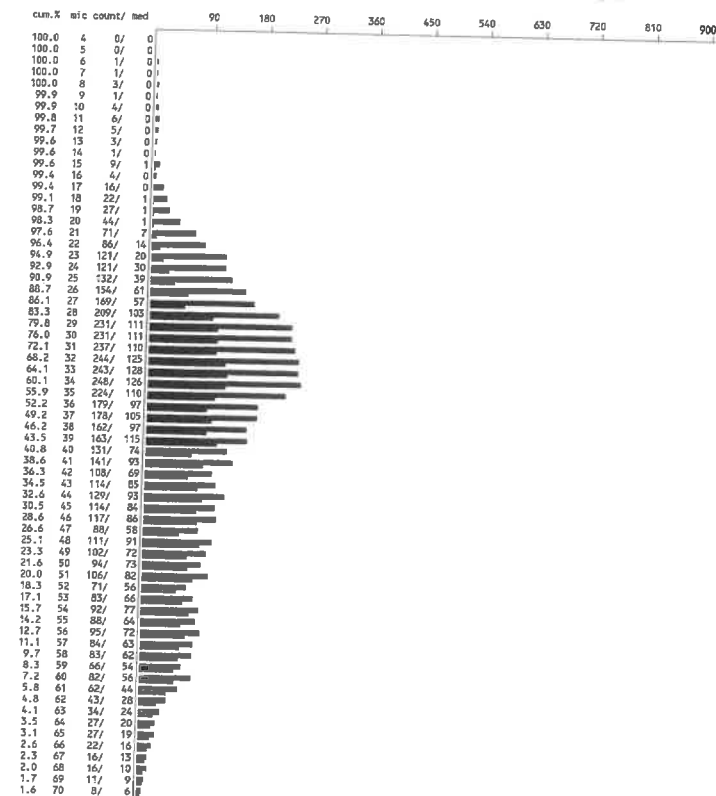
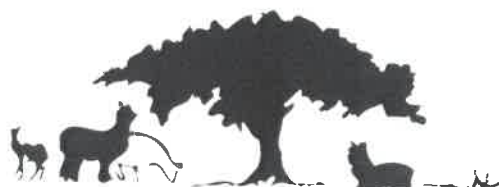


Figure 4

Examples of undesirable fibre diameter distribution histograms for measurements of alpaca fibre made on the OFDA. In these histograms the distribution of medullated fibres is shown by the bolder darker bars.



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fibre diameter of 38.0  $\mu\text{m}$ , CV 32.2%, and medullation incidence of 50.2% w/w and a tendency for bimodal distribution. The example on the top right has a mean fibre diameter of 38.5  $\mu\text{m}$ , CV 32.6%, and medullation incidence of 63.9% w/w. The example at the bottom has a mean fibre diameter of 33.4  $\mu\text{m}$ , CV 32.2%, and medullation incidence of 26.8% w/w.

### Where to test?

Fibre Testing Services using the OFDA are available in Victoria from:

- Victorian Institute of Animal Science, telephone (03) 9217 4365
- Melbourne College of Textiles, telephone (03) 9389 9228

Airflow and Laserscan testing are available from the Australian Wool Testing Authority, Sydney and private suppliers. In other States, growers should check with their local Department of Agriculture for fibre testing services.

## Survey Of Australian Alpaca Fleece Quality

Preliminary data from the first year of the research project 'Productivity and marketing improvement of the Alpaca fibre industry in Australia' are given in Table 2. Midside mean fibre diameter ranged from 24.3 to 30.2  $\mu\text{m}$  and mean CV% ranged from 23.3 to 26.2%.

We are currently evaluating the relationship between midside and whole fleece measurement. On all properties the mean fibre diameter of the pieces line was about 10  $\mu\text{m}$  greater than the midside fibre diameter.

## Management and Environmental Effects on Alpaca Quality

The objective of this section of the paper is to briefly mention some of

the management and environmental effects on alpaca quality. There are five major management and environmental effects that can be manipulated by producers to influence fibre quality and production. Some management and environmental effects offset or counteract benefits gained by other management effects. The effects: are live weight, nutritional manipulation, flock type, flock structure and genetic selection.

### Live weight

As alpacas grow and become heavier they generally grow coarser fibre. If producers wish to produce fine alpaca a production system needs to exclude heavy animals that produce coarse fibre. For example, a producer may wish to exclude all alpacas producing fibre 28  $\mu\text{m}$  or stronger.

### Live weight, age and alpaca fibre diameter

Many commentators have concluded that alpaca fibre diameter increases as alpacas age. This concept is not reliable under all conditions. Under conditions of good nutrition, age and mean live weight of alpacas are reasonably correlated with each other, but under poor nutritional conditions

leading to alpacas losing live weight, live weight is much more likely to account for more variation in fibre diameter than age.

Live weight loss naturally occurs when animals graze dry mature pastures in Australia and in Peru. Live weight loss would occur if animals were grazed at too high a stocking rate; during droughts; during lactation if nutrition is poor; or if severe internal parasitism occurred.

In Peru the average live weight of female alpacas in peasant communities is about 45 kg (Bryant *et al* 1989) while alpaca farmed in high input systems in Peru and New Zealand have live weights of 56 to 73 kg (Davis *et al* 1991). Live weight gains in New Zealand are much higher than is normal in South America and the fibre diameter of adult alpacas is 1.3 to 3.1  $\mu\text{m}$  greater and the fibre diameter of crias 6.0  $\mu\text{m}$  greater than is reported from South America.

### Nutritional manipulation

As just mentioned there are a number of ways in which alpacas can experience poor nutrition resulting in live weight loss. On Australian farms, managers have two main methods of manipulating the nutrition of live stock.

Fibre measurement	Property 1	Property 2	Property 3	Property 4
Fibre diameter ( $\mu\text{m}$ ) range	30.2 19.9-43.9	25.7 19.8-33.0	26.9 19.9-41.0	24.3 19.3-31.6
Co-efficient of variation (%) range	23.3 16.3-32.6	26.2 20.2-39.0	24.7 18.4-35.2	25.2 19.4-32.5
Medullated fibre diam ( $\mu\text{m}$ ) range	34.6 29.0-43.0	32.1 26.6-36.0	33.2 29.6-38.6	30.8 25.0-33.0
Medullated fibre (%w/w) range	31.7 1.7-73.6	24.5 4.5-70.9	36.5 10.6-87.8	26.2 5.2-98.5
Washing yield (%) range	91.3 72.3-98.0	91.2 84.0-96.6	88.0 82.9-94.3	87.2 78.0-94.8

Table 2

*The mean and range in alpaca fibre characteristics of samples taken during November 1994 from the midside of alpacas grazing four properties in southern Australia (Total number of alpacas = 184, number of data in medullation analyses = 76).*



Stocking rate influences quality and production of fibre, mohair, milk, and meat by affecting pasture availability, pasture growth rate, pasture composition and internal parasite infection. San Martin and Bryant (1989) suggest that the stocking ratios of alpaca:sheep would be 1:1 and llama:sheep 1.5:1. These ratios would need to be used to compare animals of similar physiological state, that is for comparison of reproducing animals or for comparison of growing animals.

Supplementary feeding of energy is usually provided in droughts, dry summers, at weaning and during late pregnancy and lactation. Energy supplementation directly reduces live weight loss or results in live weight gain and therefore affects fibre diameter. Generally the costs of feeding energy supplements far outweigh the direct benefits of increased fibre production. Supplementary energy is definitely indicated before the welfare of

the animal is at risk (droughts, pregnancy) and large benefits can arise when energy is fed to lactating females during droughts.

During the pasture growing season in southern Australia, supplementary feeding of protein and non-protein nitrogen is not usually warranted as pastures contain more than 18% crude protein (dry matter basis). Research results in Australia and the USA have shown that when sheep and fibre goats graze growing pastures, the costs of feeding protein supplements far outweigh the benefits in terms of increased financial return (McGregor 1990).

### Flock Type

Many wool producers maintain specialist flocks of wethers and some wool growers only have wether flocks. Why is this so? The main reasons are related to management and labour. Breeding flocks are subject to major

nutritional stresses in autumn and winter which results in reduced wool quality and tender, low strength wool. Wether flocks are less susceptible to such stresses. Wether flocks also require no labour at lambing!

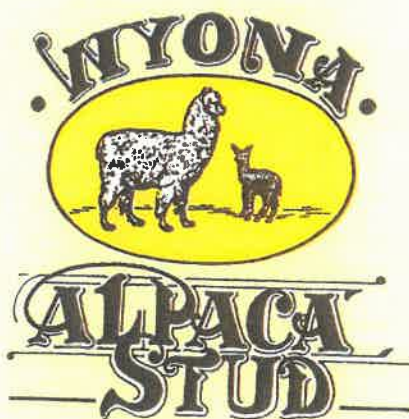
Running wethers is a cheaper and easier way to be introduced to alpaca production. It requires less labour and, by instituting rigorous culling and replacement management, wethers could always be producing alpaca fibre with fibre diameters less than 28  $\mu$ m.

### Flock Structure

Flock structure refers to altering the proportion of different classes of livestock, such as more younger animals and less aged animals. In terms of fleece quality it is best to manage the breeding females to ensure high rates of reproduction and cull older less productive females with poor quality fleeces. One of the reasons why relatively little fine baby alpaca fleece is

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produced in Peru is that peasant communities don't mate female alpacas until 3 to 4 years of age, thus increasing the relative production of coarser adult fibre. In high input systems it is possible to mate females at 1 year of age (Bryant *et al* 1989) thereby reducing the number of older females required and increasing the relative production of fine alpaca fibre.

### Genetic Selection

It is clearly possible to change alpaca characteristics by genetic selection and/or changing alpaca strains. This topic is covered in more detail in other Alpaca Association proceedings (Ponzoni 1993, Tuckwell 1993).

### Genetic Selection

It is possible to select for finer alpaca fibre with reduced CV%, for less medullated fibres and heavier clean fleece weight as these traits are all heritable. Breeders need to be aware that these traits are correlated. This means that changes in one trait will affect another trait.

Breeding indexes and progeny testing are required to fully evaluate potential males and to provide weighting of various traits prior to selection to ensure that your objectives can be reached. One of the objectives of our

current research project is to provide data for the development of genetic data and breeding indexes.

### Strain Selection

Australian breeders can now purchase Chilean, Peruvian, Huacaya and Suri alpacas and llama and llama x alpaca cross animals. There is also variation within strains and opportunities exist for crossbreeding between strains to select the animals most suited to Australian conditions.

### Conclusions

Farmers wishing to produce quality alpaca have clear directions for breeding and management of animals. The future evolution of the textile market requires more comfortable clothing. Within the Australian population good quality alpacas are available. The methods for on farm assessment of fibre are relatively simple but must be carefully followed if benefits are to be obtained. Much needs to be learnt about the influence of both management and environmental factors on alpaca fibre quality under Australian conditions, but practical guidelines have been given. An exciting future awaits breeders developing alpacas adapted to Australian conditions using the genotypes now available.

### ACKNOWLEDGMENTS

Co-operating owners of alpacas and property managers are thanked for their assistance and for access to their valuable animals. The Rural Industries Research and Development Corporation is gratefully thanked for financial support. I am grateful for the assistance of Mr. Chris Tuckwell, without whom the research project would not have been possible, and for technical support from Ms. Andrea Howse and Ms. Jacqui Aylan-Parker. Dr. Adele Feakes and Mr. Chris Cotton are thanked for analysis of skin histology sections.

*Bruce McGregor is a Senior Animal Scientist with the Victorian Department of Agriculture and specialises in improving the production and quality of specialty animal fibres. He is past president of the Victorian Branch of the Australian Society of Animal Production.*

*This paper, along with all the other informative papers given at the Association's 1995 industry seminar are available in a bound compilation. On the back page of this issue you will find an order form from which you may order the 1995 industry proceedings as well as other publications of the Australian Alpaca Association Inc.*

## Valé Sandra Joy Harrison

It is with great sadness that we record the untimely passing of a foundation member of the Australian Alpaca Association.

Sandra was the much-loved wife of Laurie and mother of Mitchell, Andrea and Simon.

We extend our deepest sympathy to her family.



# Betty Williams

by Pam Mahomed

South Gippsland animal portraitist, Betty Williams, has loved horses and art all her life. She is a very talented equine artist.

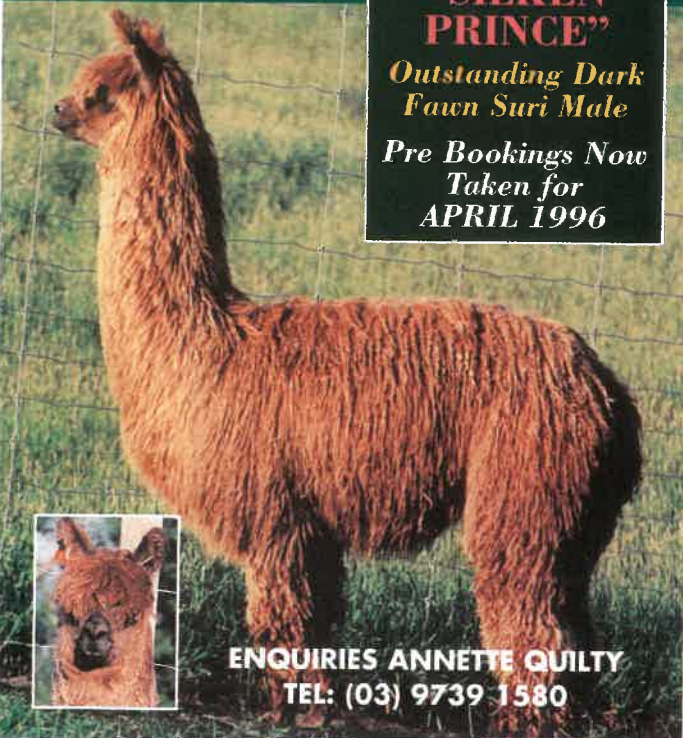
As a child, growing up in Melbourne, she would follow the baker's cart back to the depot and help unharness and groom the horse.

When Betty first saw the unusual little alpacas grazing in the paddock at Luamber Alpacas Stud, it wasn't long before she was on the phone to us, asking if she could visit and sketch the animals. She had fallen in love with alpacas, with their large brown eyes and long eyelashes.

The Williams family duly arrived. The family, with cameras and Betty with sketch pad and pencil.

Betty soon had sketches of the ever inquisitive Luamber Patrik Hatrik in typical pose. So began a lovely friendship of the Mahomed and Williams families — and a new interest for Betty.

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Betty soon discovered alpacas have something in common with horses — no two are the same. Their faces and colours are different — so are their temperaments.

Betty has exhibited equine paintings in the Victorian Bookmakers Club and has had many commissions from well known race horse owners, trainers and show judges. Often commissioned works have been painted from photographs sent by clients from all over Australia. She has also had many of her paintings and sketches published in equine magazines.

After becoming acquainted with alpacas, Betty has been busy painting cards and handkerchiefs and has executed portraits in oils as well as water colours. She also produces attractive papier maché alpaca models.

Betty Williams lives in Foster, Victoria.



*'Anyone we know?'*

*Artist, Betty Williams unveils her portrait to subject 'Coolaroo Gregory' at Luamher Alpacas. Gregory seemed quite taken with the result.*

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- First 2 Yrs & Over Male, Melbourne RAS, 1994.
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# Instinct for Survival

by Jan Evison

*A New Year's victory for  
Jan, Len and Bonnie  
Kathelen.*

We are very new to the world of alpacas. In fact, we are new to the land.

It was 7.30 am on New Year's Eve, 1994 and Len called me down to the front paddock to observe the goings on of our herd. There was our pregnant alpaca, Vikki, surrounded by males and wethers. They were all trying to mount her. We thought that she might be sick, so we put the guys into an adjacent paddock so that she could still see them without being hassled.

Len and I were not prepared for what followed. We took turns watching Vikki and offered comfort. We thought it unlikely that she was going to give birth because she still had about five weeks to go.

The previous four days had been close to 40 degrees. Thinking she could be suffering from hypothermia, we kept her in the shade and gave her plenty of fresh water. It was shopping day, so off I went for an hour.

About 9.15 am she started to dilate and lay on her side and in cush. Ten minutes later, she wandered off into a clearing under a tree, lay down on her right side and her water broke. From the time her water broke until birth took about 40 minutes.

Len was home alone, armed with a video camera and he managed to get everything on film. The cria's nose was visible and came more with each contraction. After about five minutes, the cria disappeared back into the birth



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canal, much to my husband's horror, but two more contractions produced a precious little face and a left foot. The cria was taken for a bit of a drag up the paddock, then very unceremoniously escaped the security of mother's womb to land on very dry, dusty terra firma.

There didn't seem to be any complications. Were we wrong? The cria only weighed 3.5 kg and we knew this was not good. To make matters worse, the mother was disinterested in the baby after her initial inspection of this little thing that had just fallen out of her hind quarters. Len felt she should have at least attempted to clean the cria. He removed the sac from the baby's mouth, nose, eyes and legs.

Because we are in a drought area, we had no fresh green pasture to boast about, so Len put the cria on a clean towel and left it alone. It made no attempt to lift its head or stand up. It didn't even move.

This was the drama that greeted me

on my return from shopping. Luckily, I had bought a few supplies from the chemist, but never dreamed of having to use them so early.

Len had dried the cria and made sure there were no obstructions in its mouth. Three hours had passed. The mother just lay beside the cria which was not trying to feed — not moving at all.

We felt absolutely useless and very inexperienced.

We moved the cria to a covered enclosure with easy access to Vikki. I gave it an enema. Realisation struck that we were going to lose this precious little white female unless we started expressing the mother's colostrum. As first timers, we found out how much fun can be had when milking an alpaca — absolutely none! We removed the teat caps and warmed our hands (thanks to James Herriot!) and went on to 'milk'. We used a sterile baby bottle to collect it, but could

only managed to get 25 ml. The cria refused all our efforts to suck on the teat, so out came the syringe. I also encouraged the cria to suck on my little finger, dribbling the colostrum down it.

The mother was becoming stressed, the cria still hadn't moved and we were at our wits' end.

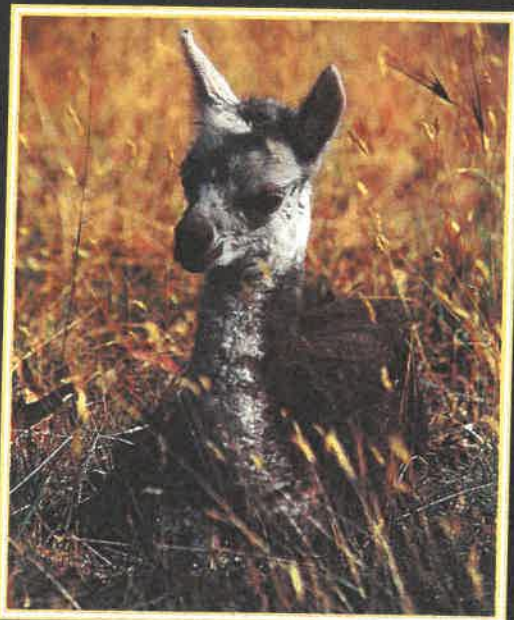
Over the next twelve hours, we could only manage to get 243 ml of expressed milk.

Our vet came out, examined the cria and told us that she was very weak. We already knew that. Her ears were back and she had very soft nails — but she was pink where she should be pink. Being optimists, we were convinced the cria had a fighting chance. We stayed with her all night.

Later in the morning, we rang a couple of friends to tell them of our new addition and our ordeal. Perhaps they could give us some fresh ideas. What a mistake that was. Vikki was

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more upset by strangers than she had been by our attempts at milking her.

Our final milking proved to be the worst of all: 10 ml. Vikki was exhausted. She wouldn't let us near her at all and the cria had not fed for two hours. It was 4 pm and we were desperate.

In a last ditch effort, I finally got through to a raw goats' milk supplier, about 40 minutes drive away. She sold me 2 litres of colostrum, 2 litres of milk and 250 ml of acidophilus culture. She also gave me a long thin teat she uses for her Angora kids. The dash home was unnerving as I had been gone for nearly two hours and the cria hadn't fed for approaching five.

I had enough of the colostrum thawed out in the car to give her 50 ml. I tried the new teat and it was perfect. The cria took the lot and wanted more. Within an hour she had made her first serious attempt at getting up on her own. It was really hard to stop ourselves trying to help her.

Everyone to whom we had spoken had advised us not to persist with bottle feeds, but to get her on to the mother. We had figured out that this cria could be anything up to six weeks premature and the only thing we had in mind was to keep her alive. If this meant feeding goat colostrum by bottle for hours on end, that was the way it had to be.

It seemed to us there was little to gain by forcing a premature cria on to a teat when she couldn't even hold up her fragile little head.

The next feed was at 6.30 pm and she only took 25 ml, but the previous two hours had begun to give real life to this tiny new arrival.

We began feeding the cria hourly through the night. At one stage, we laid the mother on her side and placed the cria on a teat. This is unnatural for both animals and it caused a great deal more stress in an already stressful situation.

Somehow, we all survived the second day of the cria's life.

At 2.30 am the next morning, Len and I sat in the makeshift manger, exhausted. We gave Vikki some fresh hay and water. She lay down beside us and let us stroke her tummy and head which was quite unusual.

We gave the cria another 40 ml of colostrum/milk blend. Just then, Vikki made her lovely 'nuck nuck' sound and the cria got up by herself and started to suckle on her mum.

Between 3.30 and 7 am, 148 ml of

goats' milk went down the cria's soft little neck and it began to strengthen her beyond our dreams. At 8.30 am and 10 am the cria fed for 10 minutes on and off and she seemed very pleased with herself. At last she could stand up long enough and had enough strength in her neck to keep her head up and the teat in her mouth.

We left them for three hours so they could get some well-earned sleep. In that time, we sterilised and filled



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*Jalenev Bonnie Kathelen at 3 days.*

bottles and had a welcome cup of tea.

For the next three feeds, I supplemented the cria with the bottle. She continued to make progress.

The reward came on the fourth day. The cria ran around on her own, having a great time. I also heard her first sound — and when she ran up to me and put her nose on my face, I cried.

She gained 1.5 kg in a week and she is beautiful. We have named her



*At eight months, she's doing just fine.*

Jalenev Bonnie Kathelen — named for the strongest women I know: my friend Bonnie, my mother-in-law Kath and my mum, Helen.

We believe it's good to follow your instinct. All we really did was give her strength to live, because she already had the will. We were not ready for those three days. We know now that basic supplies can be a life saver: 2 x 20 ml syringes; two long, easy flowing teats; a mild enema and some backup colostrum and milk (we believe goat is

next best to alpaca).

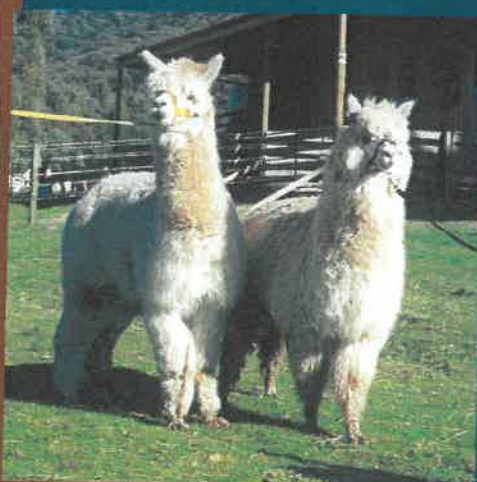
Some may not agree with our methods and have other ideas. But, what we did worked for our cria. We feel you shouldn't worry too much about getting the cria on to the mother if it is unable to stand. Feed by bottle until the cria is strong enough — our bet is that nature will step in eventually.

*[Jalenev Alpacas is located at Pine Mountain, around 17 km west of Ipswich and 50 km south of Brisbane.]*

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## TTEAM Topics

**TEAM** (tem) *n.* 1. Any group players on the same side in a game. 2. Any group organised to work together. *v.* To join together so as to form a team.

Alternate spelling **TTEAM** 1. Tellington-Jones Equine Awareness Method. 2. Tellington-Jones Exotic Animal Method 3. Tellington-Jones Every Animal Method 4. Tellington-Jones Totally Enthusiastic Animal Method.



TTEAM is a system of teaching animals developed by Linda Tellington-Jones. Linda has been a major influence in the equine world for over 30 years, competing and winning nationally in several different horse disciplines. She is internationally known for her work as a horse trainer. Linda travels world wide, sharing her expertise with everyone from backyard horse enthusiasts to world class riders and trainers. She is the author of four books on horses/TTEAM.

The work that was to become TTEAM began about 15 years ago when Linda temporarily left the horse business to study with Dr. Moshe Feldenkrais, an Israeli physicist who developed a method for improving human potential and movement called the Feldenkrais Method. One of the key principles of the Feldenkrais Method is that, through non-habitual movement, the nervous system can learn in one session, provided that there is no fear and no pain.

Linda began using some of the Feldenkrais techniques on animals and noticed some amazing behavioural changes. She then went on to refine and develop a system for non-forceful training that helps to maximise an animal's potential both mental and physical.

Today, TTEAM as it is applied to horses, consists of three part: body work to relieve tension and pain, and bring about awareness; ground exercises to improve balance, coordination and concentration; and riding with awareness. The ground work and body work have been used with exotic animals, dogs, cats, alpacas, llamas and humans all with great success.

I have been teaching TTEAM to llama enthusiasts since 1987. I began to work sporadically with a number of alpacas and alpaca enthusiasts as well. In 1994 I journeyed to

Australia as a TTEAM practitioner. I worked with alpacas intensively while down under. Three months, seven clinics and many miles later I collected an abundance of new insights into alpacas, their owners and the issues specific to both.

While alpacas and llamas differ in many ways both physically and behaviourally, TTEAM training is an appropriate method for alpacas.

The TTEAM philosophy of using understanding rather than force and encouraging an animal to think rather than react instinctively is just as valid for alpacas as it is for llamas. In fact TTEAM is now commonly used with dogs and cats as well as horses and humans.

Llamas are smaller than horses and for that reason it is easier, safer and more tempting to use force. An alpaca's even smaller size makes it even more tempting to use force to get the job done. I have often seen alpacas up-ended or picked up and moved when they were resistant to initial non-forceful attempts at training. I have heard many people use an alpaca's smaller size as a marketing point. If an alpaca won't go along with the program you simply pick them up or lay them down. While this is certainly true and possible, it may not be the most effective way to end up with an alpaca that enjoys his or her association with people and will actually seek out human companionship. Picking up a resistant alpaca serves to reinforce the animal's tendency to lie down when uncertain. Taking time to teach your alpaca to stand quietly for shearing and toenail trimming and to lead alone without using force may save you time in the long run. If your alpacas are friendlier because of it you will certainly gain marketing advantages.





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# *The Twelve Days of Christmas*



(To be sung with gusto at any Christmas Camelid celebration)

On the first day of Christmas, my true love gave to me  
An alpaca in a pear tree.

On the second day of Christmas, my true love gave to me  
Two haughty hembras  
And an alpaca in a pear tree.

On the third day of Christmas, my true love gave to me  
Three cute crias,  
Two haughty hembras  
And an alpaca in a pear tree.

On the fourth day of Christmas, my true love gave to me  
Four green guanacos,  
Three cute crias,  
Two haughty hembras  
And an alpaca in a pear tree.

On the fifth day of Christmas, my true love gave to me  
Five silken suris,  
Four green guanacos,  
Three cute crias,  
Two haughty hembras  
And an alpaca in a pear tree.

On the sixth day of Christmas, my true love gave to me  
Six ticklish tuis,  
Five silken suris,  
Four green guanacos,  
Three cute crias,  
Two haughty hembras  
And an alpaca in a pear tree.

On the seventh day of Christmas, my true love gave to me  
Seven huge huarizos,  
Six ticklish tuis,  
Five silken suris,  
Four green guanacos,  
Three cute crias,  
Two haughty hembras  
And an alpaca in a pear tree.

On the eighth day of Christmas, my true love gave to me  
Eight charming chilis,  
Seven huge huarizos,  
Six ticklish tuis,  
Five silken suris,  
Four green guanacos,  
Three cute crias,  
Two haughty hembras  
And an alpaca in a pear tree.

On the ninth day of Christmas, my true love gave to me  
Nine vain vicunas,  
Eight charming chilis,  
Seven huge huarizos,  
Six ticklish tuis,  
Five silken suris,  
Four green guanacos,  
Three cute crias,  
Two haughty hembras  
And an alpaca in a pear tree.

On the tenth day of Christmas, my true love gave to me  
Ten huacayas humming,  
Nine vain vicunas,  
Eight charming chilis,  
Seven huge huarizos,  
Six ticklish tuis,  
Five silken suris,  
Four green guanacos,  
Three cute crias,  
Two haughty hembras  
And an alpaca in a pear tree.

On the eleventh day of Christmas, my true love gave to me  
Eleven machos mating,  
Ten huacayas humming,  
Nine vain vicunas,  
Eight charming chilis,  
Seven huge huarizos,  
Six ticklish tuis,  
Five silken suris,  
Four green guanacos,  
Three cute crias,  
Two haughty hembras  
And an alpaca in a pear tree.

On the twelfth day of Christmas, my true love gave to me  
Twelve llamas leaping,  
Eleven machos mating,  
Ten huacayas humming,  
Nine vain vicunas,  
Eight charming chilis,  
Seven huge huarizos,  
Six ticklish tuis,  
Five silken suris,  
Four green guanacos,  
Three cute crias,  
Two haughty hembras  
And an alpaca in a pear tree.

P.S. *We* have run out of space, but should report that on the thirteenth day of Christmas,  
THE ALPACA ATE THE PEAR TREE! — Riki Marten





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## Snap shot

# Alpacas Chaparral and the Artist

by Dee Finlay



*'A Pac of Three'*  
Pastel alpaca portrait by Mark Short.

It's been barely 12 months since my partner, Mark Short and I brought our first two alpacas — two pregnant females. During the previous six months, we had done a lot of research, asked a billion questions and spent hours discussing the pros and cons of changing our lifestyles to include these animals that we had both fallen in love with.

Both Mark and I work in the aquatic field — he as manager of the Pt Vincent Aquatic Centre on Yorke Peninsula, and I as coordinator of school Surf Safety programs in Adelaide, both about as far removed from breeding alpacas as it is possible to be. But that's what makes life interesting!

Our stud name is 'Alpacas Chaparral' ('Chaparral' meaning 'an area of scrubby oak trees' in Spanish. There are a lot of sheoaks on Yorke Peninsula). At present our animals are agisted at Ambersun Alpacas at Clarendon with Chris Williams and Adrienne Clarke. Chris and Adrienne have been extremely helpful and we've learned such a lot about the ongoing care of alpacas as well as the usual problems that

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one may encounters with alpacas. Twelve months down the track, we have five healthy animals — four females and one male; a very good ratio with which we are thrilled.

Our first two cria, 'Charlie Brown' and 'Gypsy' had to be bottle fed for several months and Mark took them back to Pt Vincent with him so that he could feed them regularly. They lived in the garden, quickly became local celebrities and were adopted by the whole town. Charlie Brown took over the front page of the local newspaper and stole everyone's hearts as he's such a character. We've decided that he will be worth his weight in gold for promotional reasons, if nothing else!

We also discovered that alpacas are partial to rose bushes and hibiscus, among other things.

Mark is an artist who has been painting for 12 years. Bush scenes, sea scapes and birds are his favourites and recently he's turned his hand to painting alpacas.

Before the alpaca industry seminar in Geelong, Mark quickly whipped up some paintings in pastel and gouache to exhibit at the seminar. They attracted a great deal of interest and in fact, his pastel of 'Charlie Brown' sold during the seminar. Since his alpaca paintings have been exhibited, Mark has been approached to do some commissions. He's really thrilled about this as he really enjoys capturing the character of these animals.



*Dee Finlay and Mark Short with their alpacas, 'Gypsy' (with Dee) and 'Charlie Brown'*

We have just become proud land owners with the purchase of 20 acres at Minlaton on Yorke Peninsula. Next is something to live in and then all of our animals can move in and 'Alpacas Chaparral' will be in business. It's really excit-

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ing to have the stud develop and grow into a reality from a vague idea 18 months ago.

It's also exciting for Mark to have found these wonderful new subjects for his paintings.

To cap off a great year, 'Gypsy' has just placed second in the 6 to 9 month class at the Royal Adelaide Show and then she went on to become Reserve Champion Female. We still haven't stopped grinning!

My Mum said to me the other day, 'I think you've found your niche, Dee. You've always had a "thing" about fluffy animals.' And she's right. I do have a "thing" about fluffy animals, and alpacas are the nicest fluffy animals I know.

If any of our readers is interested in commissioning Mark Short to immortalise their favourite alpaca — you are welcome to contact him on (08) 88 537298.



*Mark Short with Chaparral Gypsy, Reserve Female Champion, 1995 Royal Adelaide Show.*

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# P A C A Pics

## Pic of the Pack



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*Rancho Pusterla,  
Antonia Pusterla*

**"HEY, DON'T  
RUSH ME! I'M  
NEW AT THIS"**

*Omega Alpacas,  
Chris Burney*



**"ASK YOUR MOTHER IF YOU CAN  
PLAY AT MY HOUSE."**

*Warralinga Alpaca Stud, Lyn Dickson*



**"WAA! SOMEONE  
STOLE MY EARS,  
MUM!"**

*Gunnamatta Stud  
Alpacas, Sue Maynard*

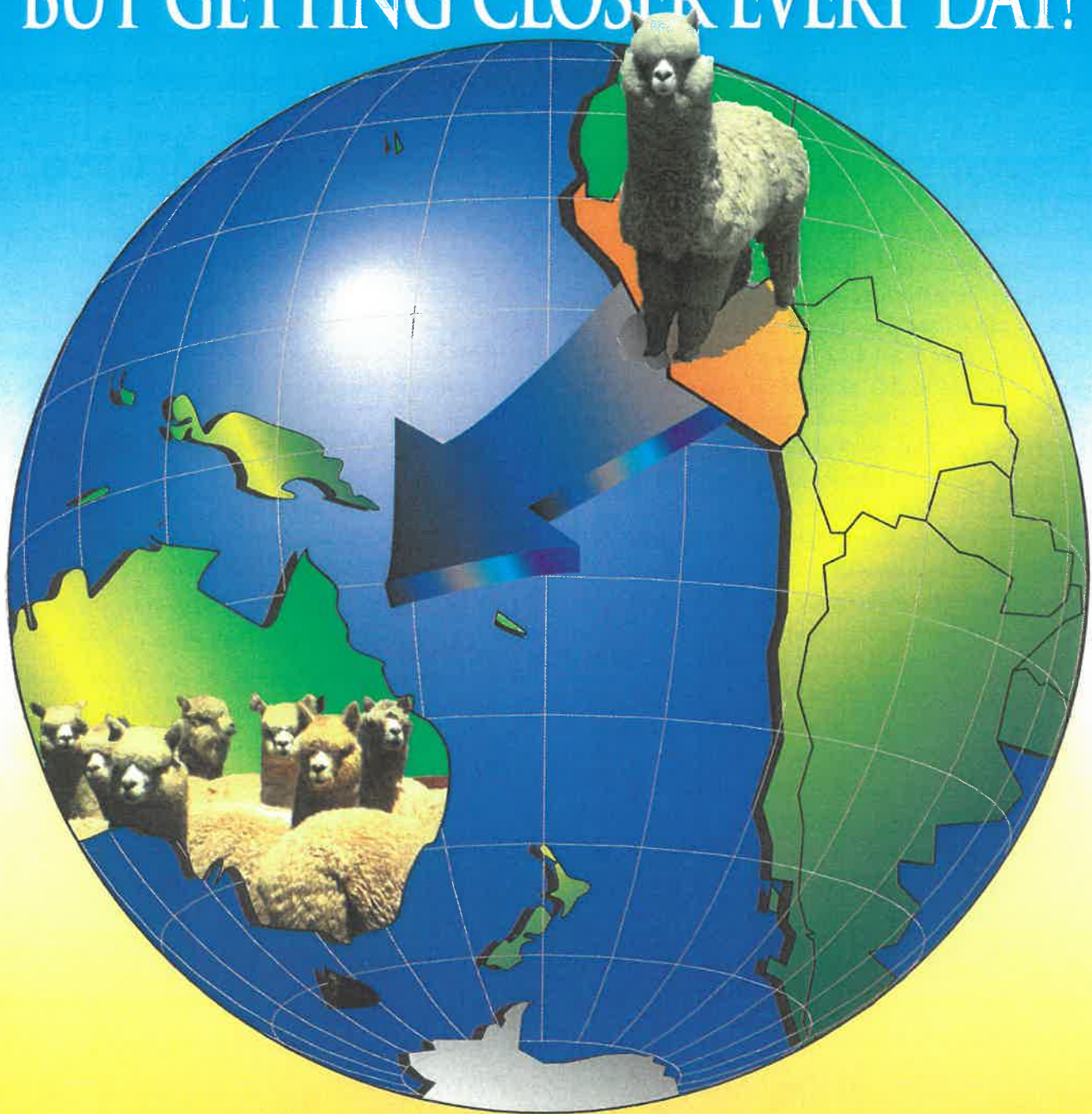


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*D & S. Bowen, East Burwood Vic.*



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## VETERINARY *Corner*

.....  
*by Dr Richard Potter BVSc, Healesville Veterinary*

### Preventing the 'Winter Alpaca Syndrome'

**T**his winter has seen a recurrence of alpacas in southern states being affected by vague lameness — the 'winter alpaca syndrome' — a frustrating experience for concerned, conscientious owners and their veterinarians.

The lameness may show as a low-grade hock stiffness through to an animal unable to stand for more than a few minutes. While younger alpacas are more frequently affected, older alpacas may be involved. Cria may be rendered unable to stand to feed and be significantly at risk of cold stress.

Identifiable factors contributing to Vitamin D deficit are dark animal colour, exposure to sunlight (this winter had fewer days of sunlight than usual) and birth date (late-dropped cria not having the same time to accumulate Vitamin D).

Selenium deficiency is enhanced by soils of low pH and high sulphur level; plants which have lower levels of selenium; and spring grass which has much lower levels than in other seasons. The classic example is the acidic, marginally selenium deficient soil that receives a generous application of superphosphate in autumn to produce a crop of lame alpacas in spring.

Determining the involvement of selenium is frustrating given that the correlation between dietary selenium and signs of disease is not precise; full equilibration of dietary selenium intake with blood measurements may take up to six months; and the range of GPX (the enzyme that indirectly measures blood selenium) in the normal alpaca is large (15–150).

In view of the imprecise data regarding selenium's contribution to alpaca lameness and the very predictable decrease in Vitamin D levels over winter, it is reasonable for alpaca owners in Australia's southern states to take some basic preventative measures against this syndrome.

1. Obtain a detailed soil analysis of your property.
2. Correct lime and phosphorus deficits as indicated.
3. Give selenium supplements by drench or prescription feed in consultation with your local veterinarian.
4. Give Vitamin D<sub>3</sub> injections to all alpacas in May/June.
5. Discuss the use of Vitamin ADE in winter with your local veterinarian.
6. At first signs of lameness or reduced growth rate in cria seek veterinary advice and laboratory blood assays.

---

## PERSISTENT PUPILLARY MEMBRANES

.....  
*by Dr Rowan Blogg*

*Diplomate American*

*College of Veterinary*

*Ophthalmologists*

**O**ccasionally, an alpaca may have a deformity called persistent pupillary membranes (or PPM) in the front of the eyeball which is inherited and can cause cloudy eye and vision loss. The form of inheritance is not defined.

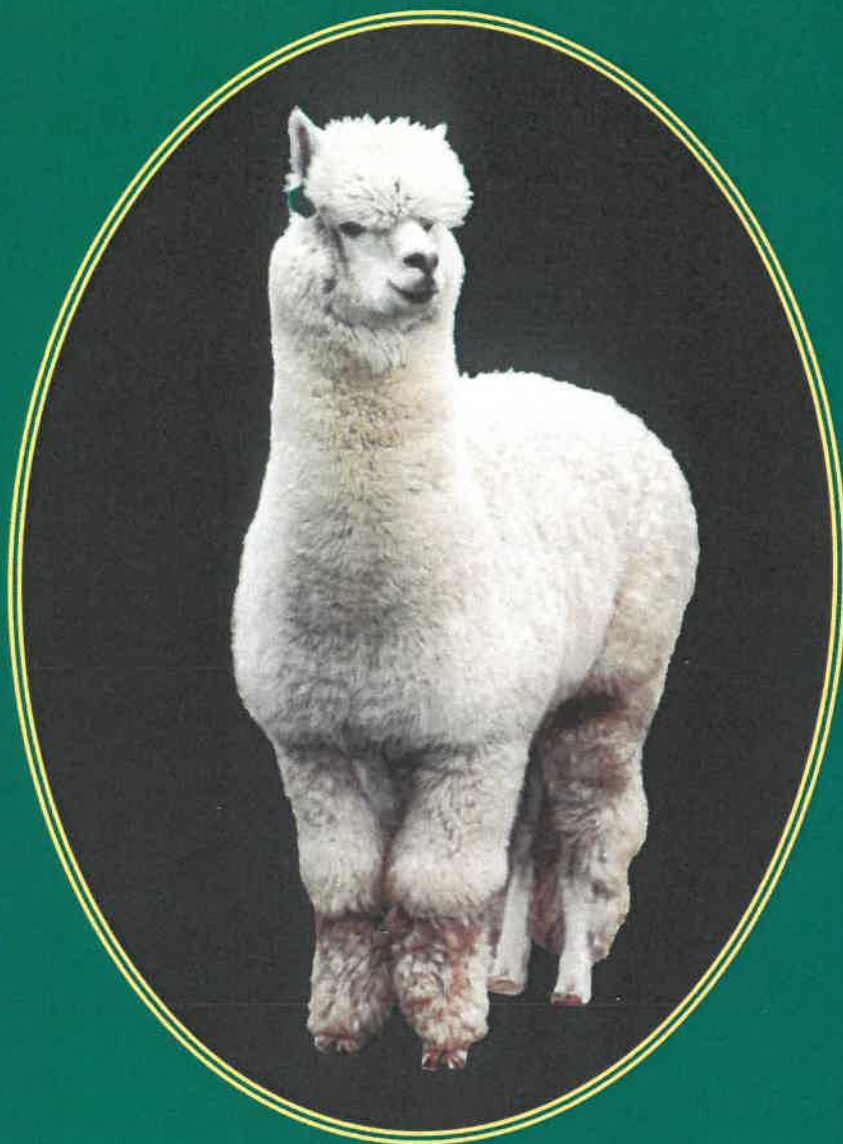
The deformity involves the brown bodies on the top of the pupil which are misshapen. Also, small thin brown strands stretch from iris to cornea (eye window). The cornea is cloudy in severe PPM due to faulty develop-

ment of deep corneal layers.

In the mild form, the eye appears almost normal. However, severe PPM leads to vision loss. An affected cria may be born so blind that it cannot follow the mother.

Routine specialist examination of all breeding stock is advised to ensure that PPM does not become widespread. A special microscope called a slit lamp biomicroscope is needed to detect slightly affected animals.

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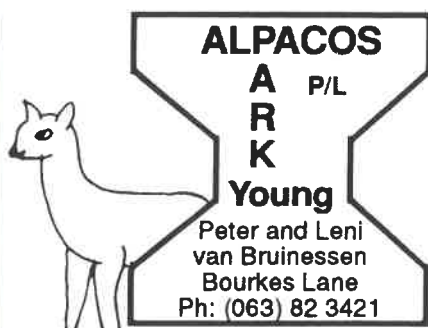
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# AAA NOTES

.....  
*from the Secretary, Ken Allston*

At the Annual General Meeting this year, some quite extraordinary statistics were quoted, namely.

Increase over previous year	
Members	48%
Breeders	59%
Alpaca Stocks	25%
Female Sales	47%

These are performances that befit an emerging and unique industry, but these increases will become more conventional as alpaca farming matures.

The picture in the year 1995 is still very acceptable.

Last year, sales were unusually high because of a run down in large breeder stocks and some carry over from the last major imports in 1993.

By the end of 1995, female sales at approximately 1000 per year will equal the birth rate — a very satisfactory situation.

Also in 1995, another 250 breeders will have joined the Association.

A new scenario is emerging. The industry was created by a few far sighted entrepreneurs and it could be expected that these same importers would dominate the sales. This is not the case today.

Some 93 per cent of our breeders have less than 20 alpacas. Already these small breeders now have half the sales and the proportion is rising.

These breeders, who dominate the industry, maintain an average of about six animals in each herd. It is thus very much a small breeders' industry.

Even more surprising is that a little under half our breeders have three or less than three alpacas. This is clear evidence that members with a small acreage have joined the industry. With

good management, and in a reasonable period of time, these breeders can sell off progeny to pay for their original investment.

## ***Striving for quality***

The next important issue is that we must strive for quality — whether it be conformation or, in the end, the much needed fibre quality.

The Association has taken the lead by introducing the certification of males to prevent mating by stock with bad genetic abnormalities. The standard required for accepting imports on to our Register has also been made much more stringent.

This close watch on imported stock is not unreasonable as the American Register appears to be introducing even stricter import requirements with the full support of industry members.

The American Association will make a final announcement on their new registration and import standard requirements in January, 1996 but, even today, a panel of veterinary surgeons lead by the renowned Dr Murray Fowler has to approve any shipment to the USA before it leaves the country of origin. It is important therefore, looking at the international scene, that Australia strives for high quality.

France imported some 600 alpacas nearly two years ago from Chile and it is understood that another 600 have been received into the UK from the same source.

Some of the French animals have already been sold to Germany where there is great interest. Thus Europe



could easily develop into a new international market.

Europe is now in the same position as were Australia and the United States four years ago. But these two countries have, in the meantime, substantially improved their animal quality. Given the appropriate quarantine protocols, Europe could easily become a customer for high quality stock to improve their herds.

Meanwhile, America is importing, in increasing numbers, quality stock from South America and could easily overtake the Australian herd size. This stock is found after searching through literally thousands of animals.

The American Association has already announced that they intend to be aggressive exporters. Thus, the challenge is for Australia to maintain its position by producing quality stock.

In the past, quarantine protocols have been the stumbling block for exports other than to the USA. But, quite recently, we have seen a major relaxation of quarantine requirements in the countries surrounding the Pacific.

Overcoming the obstacle of arranging a protocol with Peru was not easy. However, it is not unreasonable to assume that protocols can eventually be arranged with Europe and other interested countries.

But the message is clear — breed for quality.

# EDITORIAL AND ADVERTISING DEADLINES 1996

*The following are deadlines for the submission of editorial and advertising material for Alpacas Australia in 1996.*

**Issue 14 — Autumn**  
**Due: March 1996**  
**Deadline: Friday 19 January**

**Issue 15 — Winter**  
**Due: June 1996**  
**Deadline: Friday 19 April**

**Issue 16 — Spring**  
**Due: September 1996**  
**Deadline: Friday 19 July**

**Issue 17 — Summer**  
**Due: December 1996**  
**Deadline: Friday 18 October**

## Editorial

(including 'Letters to the Editor')

*Please mark all editorial contributions to the attention of Carol Hosking.*

If possible, all editorial contributions should be typed. Visual material can be colour photographs or transparencies. We will endeavour to return all photos and slides.

## Advertising

*Please mark all advertising material to the attention of Joy Vellios.*

Rates and specifications are available on request. We can accept camera ready material or will produce advertising material to specification.

**Please address all editorial and advertising to:**

PTW Desktop & Design  
 Unit 9, 663 Victoria Street  
 Abbotsford 3067 Victoria

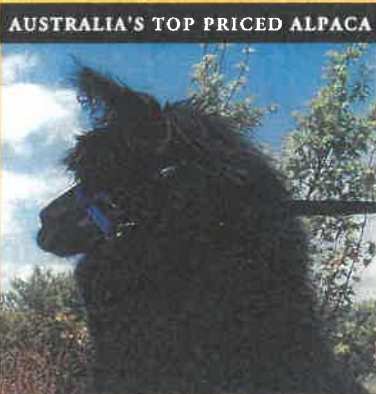
**For further information**

Phone: (03) 9428 9663  
 Fax: (03) 9428 2728  
 Mobile (Joy): 015 043 595

**during business hours.**

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# TTEAM CLINICS FOR 1996

For alpaca owners who would like to take advantage of Marty McGee's TTEAM training, here are dates and regions for 1996 clinics.

<b>March 9, 10</b>	Yarraman, Qld
<b>March 16, 17</b>	Shelbory Park Alpacas, Sydney, NSW
<b>March 20-21</b>	Ulonga Llamas and Kooringa Alpacas, Daylesford, Vic
<b>March 22-24</b>	Pucara Alpacas, Torquay, Vic
<b>March 25</b>	Talca Alpacas, Mooroduc, Vic
<b>March 30-31</b>	Snug, Tas
<b>April 13-14</b>	Llama Lleisure, WA

For session times, costs and other information, please contact  
Nerida Aldred, Ulonga Llamas, phone/fax: 053 487 739

# ROYAL CANBERRA SHOW

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**For further information**

Phone:

RNCAS (06) 241 2480; or  
Chris Greig (06) 230 3459

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<i>Promoting Alpacas Is Easy</i>	\$7.00	\$ .....
<i>Alpacas Australia</i> magazine, 4 back issues	\$14.00	\$ .....
<i>The Alpaca Book</i> : Hoffman & Fowler	\$142.00	\$ .....
<i>Animal Breeding &amp; Production</i> : Escobar	\$63.00	\$ .....
<i>Medicine and Surgery of South American Camelids</i> : Fowler	\$162.00	\$ .....
'An Introduction to Alpacas' Video	\$44.95	\$ .....
'Camelids', Veterinary Proceedings 1995	\$37.00	\$ .....
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Herd Book 2	\$27.00	\$ .....
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Please tick the appropriate box/es.

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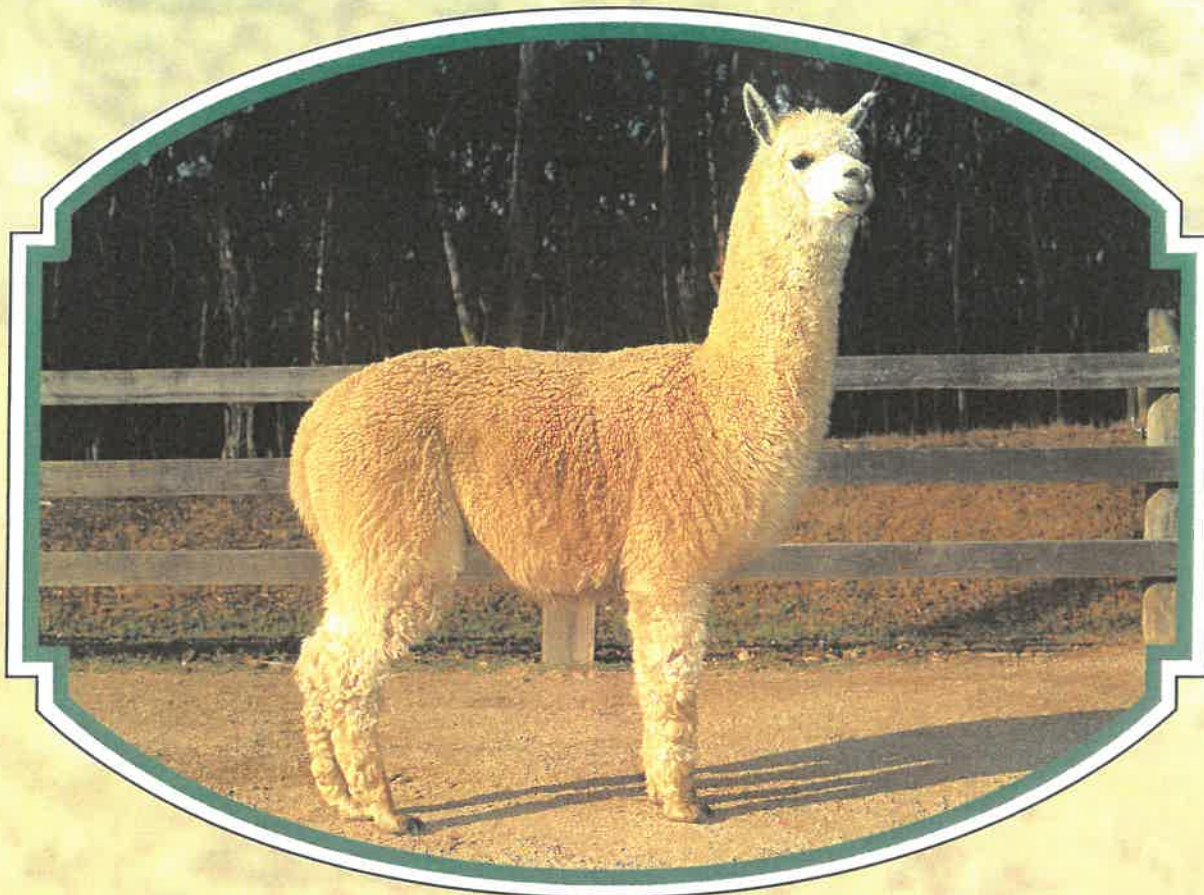
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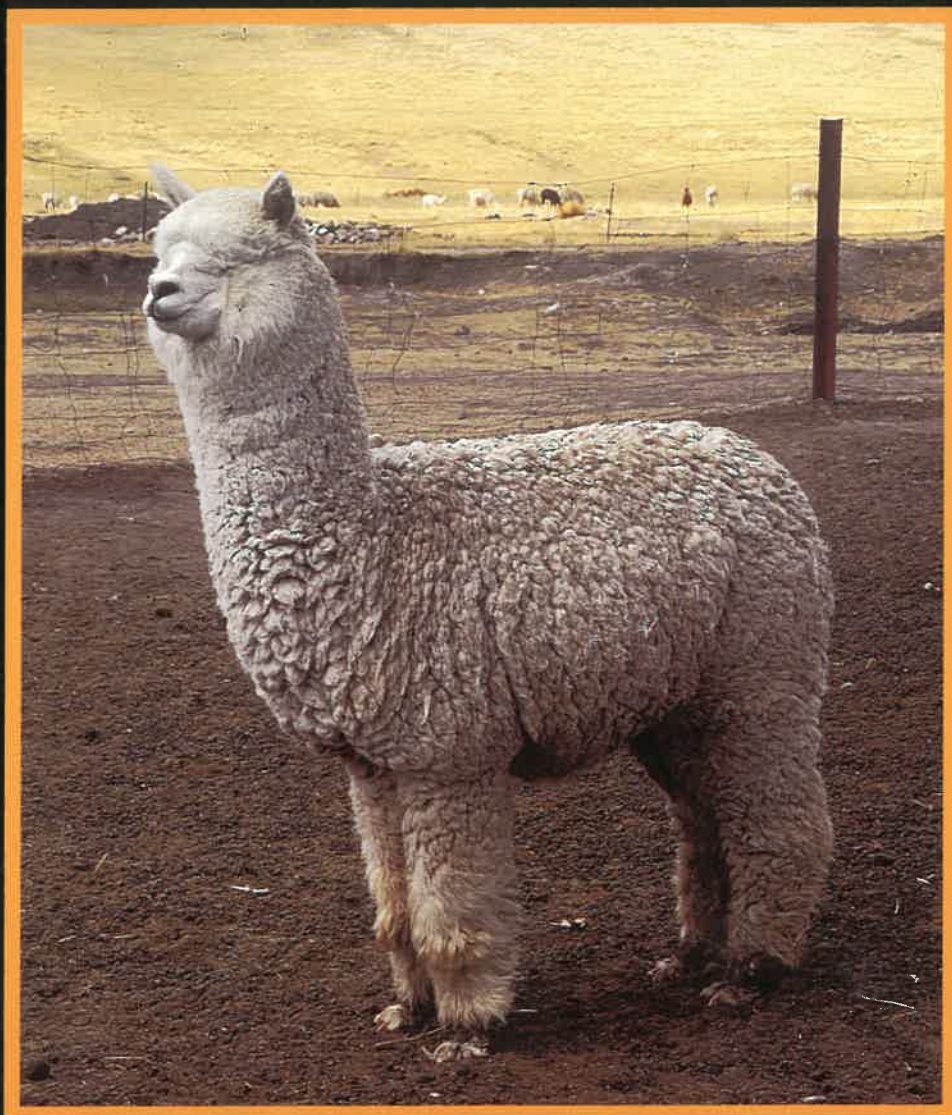
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In the years that I have been using TTEAM with horses and making it relevant to llamas and alpacas, two things stand out: that animals are different in some significant ways but their basic motivations, emotions and fears are very similar. Alpacas are anatomically different from horses, requiring different equipment.

Alpacas have wool, not hair. This necessitates a whole different set of grooming expectations and tech-

niques. Horses and alpacas are used for different things, each requiring a different set of skills.

An alpaca's behavioural cues differ significantly from those of a horse. Horses and alpacas are different from each other; dogs are different from cats and humans are different from all of the above. Yet, all of us develop relationships with others of our own kind; we feel affection for some and don't like others.

For the most part, we don't like surprises; when we don't know what is going on we get scared; when we get really scared, we panic, hyper-ventilate and react instinctively. All of us show on the outside what we are feeling on the inside (as in body language); and when we are asked to perform a service, we work more willingly if there is something in it for us.

*[To be continued next issue.]*

## TWO GREAT FEATURES

### Maggie Krieger — Striving for Excellence

A look at the career and development of the first woman ever to judge in the Peruvian Show Ring. Based on an interview with Ms Krieger during her recent visit to Australia where she judged the animal classes in the 1995 Classic Alpaca Show at Newmarket.

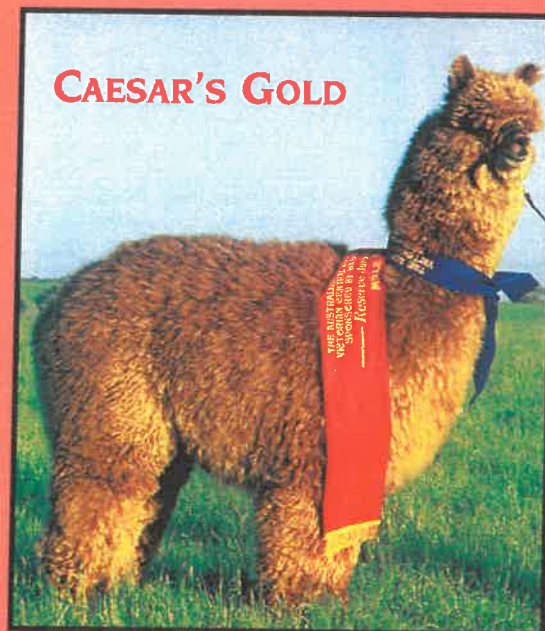
### Showing Alpaca Fleeces

**Cameron Holt**, judge of fleece classes at the 1995 Classic Alpaca Show, takes you from fleece preparation to judging. Easy to read and sprinkled with helpful diagrams and photographs, this is a must for all alpaca owners and breeders.

**ALPACAS  
AUSTRALIA  
NEXT ISSUE  
MARCH 1996**



We would like to congratulate Jenny and Gray Morgan of "Amberdale Alpacas" on their recent purchase of "Murragamba Banjo" Champion, Solid Black proven sire with an extensive portfolio of superior solid black progeny.



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