Alpacas

AUSTRALIA

ISSUE No. 28 1999

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SPECIAL FEATURE *National Conference Highlights*

A.S. Traders Desert Reign

AUSTRALIA'S PREMIUM SURI STUD MALES

From TWO leading suri breeders with ONE common aim. Together we offer the widest selection of quality suri stud males chosen for both their excellent, individual attributes and their genetic diversity.

AT STUD:

SURICAYA PARAMOUNT (White)
Sire of many show winners and two National Auction entrants.

A.S. TRADERS DESERT REIGN (White)
Chosen specifically for his oustanding conformation and density.

A.S. TRADERS DESERT DYNASTY (Fawn)
An excellent choice for those wishing to use a fine, coloured suri over an huacaya. Dynasty produces suri cria (every time) and usually to dam's colour This year's progeny include solid black, dark brown and fawn cria.

AND INTRODUCING:

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Fine, lustrous with exceptionally well defined staple, Maestro comes highly recommended from the recent Peruvian import.

SOMERSET PERUVIAN INCA TREASURE (Dark Fawn)
Sensational, different, appaloosa in type, Inca Treasure is producing quality, lustrous, coloured cria – everything from grey to light fawn.

A.S. TRADERS FORTUNES CHOICE (White)
Displays outstanding coverage – great lustre, good architecture and the independence of lock so sought after in the suri.

A.S. TRADERS FORTUNES CHOICE

Champion Suri: Melbourne Royal 1997
First in Class: National Classic 1996
Placed first in every class/every show entered
22.7 5.9 23.9 (Fleece tested Jan 1998)

Mobiles Available

Surilana

An alliance between the Somerset & A.S. Traders Suri Studs
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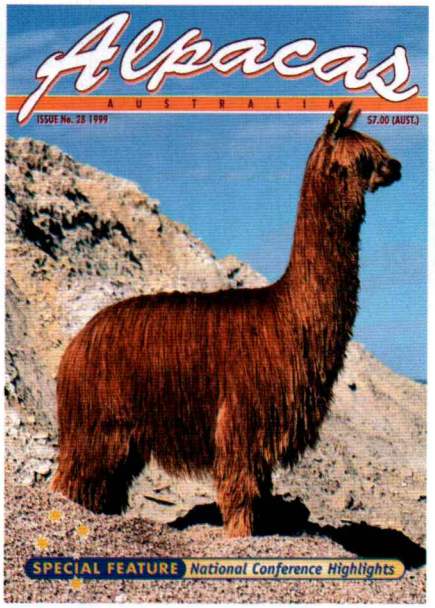

Cover: Sandi Keane, Pinjarra Alpaca Stud
Photo courtesy Andrew Ashton

Alpacas AUSTRALIA

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INAUGURAL Autumn Classic in W.A.

Western Australia's Central Region hosted the inaugural Alpaca Autumn Classic over the Mother's Day weekend. The two days of show and exhibition attracted large crowds to the event, as well as unprecedented media attention.

The show, which is the first to have been held in Western Australia outside of the Perth Royal and Albany Shows, presented a challenge to Ron Reid and his team who organised the whole event 'from scratch'.

Generous sponsorship from Scarborough Toyota enabled the committee to present what has been labelled one of the best ever shows held in the West.

A high profile location, Whiteman Park in the foothills of Perth, was chosen as the venue. Apart from hundreds of acres of natural beauty, the park also provides barbecue facilities, museums, a craft village, train rides and food outlets. The end result was a weekend that attracted breeders from all over the state, dozens of serious inquiries from the public, and alpacas being professionally showcased to the people of Western Australia.

Special guest, Kim Chance, MLC and Shadow Minister for Primary Industry opened the show. Kim opened the first alpaca conference held in Perth in 1992, so a revisit to the alpaca industry was timely. He congratulated West Australian breeders on the progress that had obviously been made in the last seven years.

Approximately 10% of the Australian herd has been grown in W.A., whilst West Australians also constitute 10% of registered breeders. For a state with a comparatively small population, this shows great enthusiasm.

Kim also took a moment to reflect on what might have been if our early pioneers had grown alpacas rather than sheep.

Supreme Champion Fleece
Windsong Valley's Royal Inca.

Bill Plunkett judged over one hundred animals and fleece over the weekend, as well as the crowd stopping Junior Handlers Competition.

All junior competitors in the arena were worthy of a prize, with everyone displaying excellent skills. (We don't have to worry about the future of our alpacas!) The blue ribbon was won by the tiniest entrant on the day, Freya Terry.

Members gave their time generously over the weekend to staff the Association and merchandise displays, and to provide spinning, shearing and felting demonstrations. The show also provided opportunity for commercial stands, and the newly formed Western Australian All Blacks were on display to sell the merits of breeding for black.

Champion and Reserve Champion awards were won by nine different studs, which demonstrates a healthy distribution of very good animals. First time exhibitors were among the blue ribbon winners, providing encouragement for all breeders to participate in the future. Terry and Tena Wheeler were thrilled to win their first Supreme Championship. They also carried off the ribbons for Supreme Champion Suri and Supreme Champion Fleece. Quite a weekend for Windsong Valley!

Championship awards

Huacaya

Junior Champion Female
Primavera Alpacas, E & L Huitenga
Primavera Anushka

Reserve Junior Champion Female
Banksia Park Alpacas, G & J Jackson,
Banksia Park Peruvian Destiny

Junior Champion Male
Windsong Valley, T & C Wheeler,
Windsong Valley Clansman

Reserve Junior Champion Male
Windsong Valley, T & C Wheeler,
Windsong Valley Braveheart

Intermediate Champion Female
Swan Valley Alpaca Stud, R & R Reid, Swan Valley Elita

Judge Bill Plunkett with Chief Steward, Pat Gardhouse and winner of Junior Handlers Competition, Freya Terry.

Simon Blank from Toyota Scarborough presents Terry Wheeler with the Supreme Champion Suri Trophy

Reserve Intermediate Champion Female
Glenbreag Alpacas, A & C Mabey, Glenbreag Coolani

Intermediate Champion Male
Ellen Vale, R & K Raynor, Cordillera Sonderado

Res. Intermediate Champion Male
Swan Valley Alpaca Stud, R & R Reid, Swan Valley Top Gun

Senior Champion Female
Swan Valley Alpaca Stud, R & R Reid, Purrumbete Bright Star

Reserve Senior Champion Female
Kaloma Alpacas, A Terry, Kaloma Jesabelle

Senior Champion Male
Pentland Alpaca Stud, L & M Binks, Pentland Valeroso

Reserve Senior Champion Male
Rosedeane Alpaca Farm, C Frieee & M Bunny, Windsong Valley Rainbow Warrior

Supreme Champion Huacaya
Windsong Valley, T & C Wheeler, Windsong Valley Clansman

Suri

Junior Champion Suri
Windsong Valley, T & C Wheeler, Windsong Valley Andean Skye

Intermediate Champion Suri
No Award

Senior Champion Suri
No Award

Supreme Champion Suri
Windsong Valley, T & C Wheeler, Windsong Valley Andean Skye

Fleece Awards

Fleece: 9-18 months
1st Windsong Valley Queen of Sheba
2nd Windsong Valley Windsong Stardust
3rd Windsong Valley Windsong Sweatpea

Fleece: 19-30 months
1st Swan Valley Alpacas, Swan Valley Majestic
2nd Swan Valley Alpacas, Swan Valley Melody

Fleece: 31 months and over
1st Windsong Valley, Windsong Royal Inca
2nd Swan Valley Alpacas, Highland Princess
3rd Encantador Alpacas, Jolimont Mancini

Supreme Champion Fleece
Windsong Valley Royal Inca

Reserve Champion Fleece
The Pines Queen of Sheba

Product development...

a long and painful process

by Jan Maude, Director Alpaca Co-operative

It is not hard to understand why alpaca is considered a rare fibre. Animal fibres make up only three per cent of all fibres used in the world (i.e. about five million tonnes per annum). Of this, alpaca production is approximately 5,000 tonnes (0.1 per cent) and, of that, only a small proportion is of the highly desirable finer lines. Quality alpaca is truly rare.

The present alpaca herd in Australia is approximately 22,000 head and the annual clip is estimated at 70 tonnes per annum. It is expected that the industry will not reach truly commercial status until around 2010 when a herd of over 200,000 is expected to produce in the region of 1,000 tonnes of fibre.

As with all fleece, the clip must be classed: normally into only three lines (although each of these is also classed by length and colour). The bulk of any clip is generally over 25 micron. This is because, as the animals mature, in most cases their fleeces coarsen with age and subsequent pregnancies. The best of the fibre is under 25 micron and is the only fibre suitable for fine worsted fabrics used in the fashion industry.

Product development

This is proving a long and painful process for the Alpaca Co-operative. In the early days we were continually frustrated in our efforts to experiment with the fibre. We were at the mercy of manufacturers who were simply not interested in processing small quantities of a fibre about which they knew nothing. Even those who did try to help inevitably put our needs at the end of their list of priorities. This is understandable, but is undoubtedly the bane of small business everywhere.

The only scour to which we had access was CSIRO. They eventually refused to take our coloured fibre as it contaminated their superfine wool. They also charged a premium for any scouring we requested. We simply could not afford to continue with them.

When it came to top making and spinning, we hit more problems. Of course, being such a small industry, it was difficult to get large quantities of fibre of any particular colour for processing and manufacturers were not interested in short runs. Besides, we were reluctant to commit too much fibre to any project until we felt we had developed it fully.

Obviously, manufacturers are profit driven and we were proving to be something of a thorn in their sides, first requesting one twist, finding it unsatisfactory, then returning to try something else again. Sometimes it took months to get it right. We really needed our own, vertically integrated processing system so that we could address all the issues involved in putting out quality product.

The Elite Fibre Australia mill (which opened in Geelong some 18 months ago) has provided an ideal vehicle for our product development — at least to yarn stage. The company is committed to processing small runs of exotic fibre: mohair, cashmere, alpaca, coloured wools, etc. The spinoff for Elite is that it will ultimately have the expertise to process large runs of alpaca and the abil-

Carolyn Jinks and Michael Boerner at Elite Fibre mill packaging the Co-op's new knitting yarns.

ity to attract most of Australia's clip. The Co-op is a major shareholder in Elite Fibre Australia Pty Ltd.

So now we have the spinning problems well on the way to solution. However, it is important that we always treat alpaca as a completely new fibre – not as a mutated form of wool. Machinery, that has been designed for wool and processes it effortlessly, can go into what seems to be withdrawal when confronted with alpaca. The structure of the fibre is different enough to impact on processing (as it also does on dyeing).

A brief history of some of the products we have developed, and their attendant problems, will give you an idea of why coming up with the ultimate range of alpaca products takes far longer than one might anticipate.

Using the whole of the clip

It is important that we develop products which embrace the whole range of fibre lines, from strong to fine.

Naturally, we have an abundance of strong fibre. As the national herd ages, these quantities will inevitably increase. However, it is expected that there will also be a greater volume of the finer lines as our genetic pool improves and herd numbers swell.

Strong: over 30 micron

Not as pleasant to the touch as fine, the strong fibre, we decided, should go into continental quilts where its thermal qualities are valued. We started with a very humble prototype and have gradually improved the model by working with a highly respected quilt maker in Victoria.

Initially, we had problems with contamination and odour. Using the scour at Elite eliminated these. We now have a luxury model quilt, sateen covered and beautifully finished. We have entered a joint venture arrangement with the manufacturer who, so far, has marketed them successfully into David Jones, Myer and Harvey Norman. A substantial order has also been secured for Scandinavia. Quality control is of paramount importance so that, even though this is a coarse line, the fibre must be clean and clear of vegetable fault. Dark fibre is also excluded as it impairs the crisp, white appearance of the sateen covering by causing a 'shadow' on the surface.

Alpaca breeders touring the spinning mill at Elite Fibre.

The challenge now is to come up with a marketable product using the dark coarse fibre! We have plenty of it, so any ideas are welcome.

Medium: 26-30 micron

This line will be the most predominant in the clip for many years, so it is important to develop products which best display the unique qualities of alpaca and which will find a ready place in the market.

It is possible, with good processing, to create products which handle similarly to much finer micron wool, but with the added features of silkiness and lightness.

Product lines from the Alpaca Co-operative.

The Board of Directors, Alpaca Co-operative (from left): Jan Maude, Pauline Nugent, Carol Mathew, Alex Stevenson, Jude Anderson, Alan Hamilton (Chair).

Yarns

The first product that comes to mind for this line is knitting yarn. The Co-operative has now produced a range of 8-ply knitting yarns in eight natural colours. These colours are achieved by blending to produce shades we believe are attractive to the hand knit market.

When we started to experiment with blends, we were astonished to discover how much white was needed to soften a colour to the required shade – sometimes as much as 70%.

In recent months, we have been lamenting the dearth of grey fibre. Apparently, it is quite difficult to find animals which will throw to type. This has caused considerable concern as grey is by far the most popular natural colour in knitting yarns and garments. It is the basic colour for most of the blending into light silver greys and charcoal. Contrarily, there is an abundance of brown fibre, a colour not so eagerly sought. However, our own experience and that of one or two breeders has shown that quite a reasonable grey can be blended from medium brown, simply with the addition of white. This will prove a real bonus for manufacturers acutely short of grey fibre – and for breeders believing their brown animals not to be desirable. We are currently experimenting with this blend at Elite.

Knitwear

It was decided to produce a range of 'practical' garments in an alpaca-wool blend. Our first attempt sold out but, in our view, left much to be desired. The product was relatively harsh. On advice, we had used the same micron wool as alpaca, having been told that there would be problems with spinning if we went finer on the wool. This proved to be untrue.

We have found that, with the use of a lower micron wool, we can maintain a reasonably silky handle to the garment and still produce within a very acceptable price range. The customer response has proved the point.

Currently, we are on our second run of these workwear jumpers. They are a rugged, no-nonsense, ribbed garment for men or women and are knitted in 60/40 alpaca/wool. Dealing with a new knitwear company, we cautiously ordered a short run of 200 garments. They were completed in time for Farm Vision at Geelong (in May) and by the end of the two days, we had only 30 left. On our third run, we are confident we have it right.

Socks

Alpaca socks are incredible. Because of their silky texture, they move easily within the shoe or boot and prevent gripping on the leather lining. They also minimise pressure by allowing movement. We have completely sold out of our first run and expect completion of 2,000 pairs shortly.

Producing quality alpaca socks has been a huge learning curve. The company we worked with on development subsequently declined to manufacture our first run because the order was too small: only 130 dozen pairs. We found another manufacturer but, while the socks proved extremely popular, we believed the finished product was not to the standard we required.

We are now involved with a top manufacturer with whom we plan a joint venture in the near future with very fine luxury socks. Meanwhile, we have had to completely redevelop our prototype and spin to new specifications to accommodate the new manufacturer's machines. We have only just been able to commit to the new run.

This manufacturer is so impressed with the socks, he is prepared to market them into major retail stores along with his own range. He will be showing in October for next winter's sales. Socks are a great way to use alpaca, as you can get at least a dozen pair to the kilogram.

Weaving

A major use for medium class fibre is in woven car rugs. Recognising their eternal popularity as gifts, we aim to put them into local department stores as well as duty free and gift shops. Ultimately, our aim is to access the export market.

We are working with a textile manufacturer to determine the best outcome.

Shanbrooke Alpaca Stud

~AUSTRALIA'S MOST SUCCESSFUL STUD~

1997 National Show

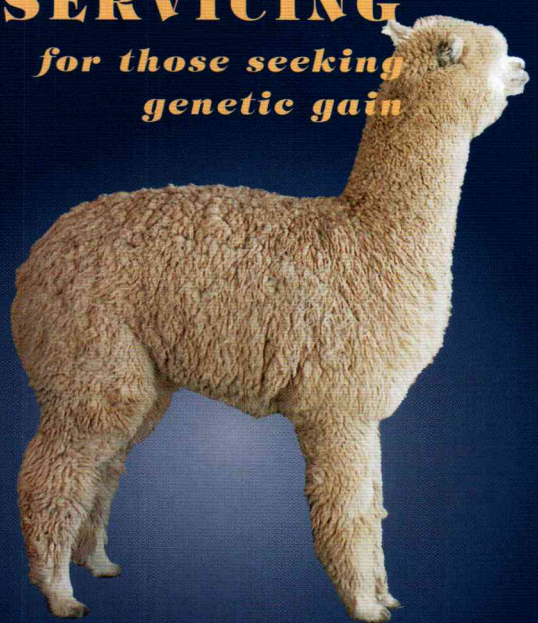
- **SUPREME CHAMPION**
  Shanbrooke High Society
- **Junior Champion Female**
- **Junior Champion Male**
- **Intermediate Champion Female**
- **Senior Champion Female**

Melbourne Royal 1997

- **SUPREME CHAMPION**
  Shanbrooke Society Lass
- **Junior Champion Female**
- **Junior Champion Male**
- **Intermediate Champion Male**
- **Most successful exhibitor**

ELITE STUD SERVICING

for those seeking genetic gain



SHANBROOKE PERUVIAN SIGNATURE

At 3 years: micron 20.28, SD 4.47, CV 22.0
(Melb. School of Textiles)

Our No. 1 choice in Peru, Signature has the presence of a champion with bundles of dense, crimpy fleece from head to toe. This stunning Light Fawn male carries brilliant lustre and handle that will enhance your females.

Shanbrooke High Society; Shanbrooke Society Lass; Shanbrooke Enchanter

SOMERSET PERUVIAN EXCELLENCE

At 1.8 years: micron 17.8, SD 3.6, CV 22 (Yocom McColl)
At 2 years: micron 16.48, 0.3% over 30 micron
(Melb. School of Textiles)

The finest huacaya male in the shipment and chosen from the Alianza Plantel herd. Excellence has the lot: density that's unmatched with his fineness, softness that melts in your hands and bundles of crimpy, lustrous fibre, even throughout. This Light Fawn male is a must for your Show Champions.

SUPERIOR STOCK FOR SALE

Including pregnant Peruvian females, weanlings and males

Ron & Dianne Condon

Tel: +61 3 9730 1399
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Mobile: 015 547 630

Jude Anderson shows the very popular workwear jumper – about to have its third manufacturing run.

We will also produce a weatherproof fabric suitable for workwear vests and coats. This line of fibre is too coarse for the production of fashion clothing fabric, so we have to seek alternative uses for it. We have already had success with a line of vests produced to test the market. We now feel confident that the product will be popular and believe there is a further market for warm, weatherproof jackets for farmers, bushwalkers and the like.

Alpaca is a new experience for these weavers. They have taken samples to establish the best way to handle the fibre. This involves looking at alpaca-wool blends and then at more technical aspects, such as efficient lubricants and antistatics for use in processing. Finishing will also be looked at closely to achieve the best possible outcome. The yarn will need to be woollen to allow the surface to be 'raised' in the finishing process. It will all take time, but the weavers are excited by the challenge.

Fine fibre – the luxury end of the market

Of course, every breeder's dream is to see lengths of fabulous alpaca fibre made into fashion garments. This is the most beautiful and luxurious end of the range of possible products. However, while the numbers of animals are so few, it is very difficult to accumulate large quantities of each of the various natural colours. As well, so much of the white is needed for blending that insufficient remains to commit to dyeing for fashion garments. Local weavers have no experience of alpaca, so it will be some time before we are ready to compete with overseas fabrics. However, we are moving forward in that area so that, as the fibre becomes available, we will have the expertise to move immediately into commercial production.

Meanwhile, we are producing a range of fine knitwear for the international market. Again, this will involve a joint venture with a top knitwear manufacturer. At the moment, we are working through the product development stage, turning out swatches of various knits and experimenting with different spins and blends such as alpaca and wool. This involves returning to the drawing board many times over and, maybe, having to convince breeders that using 100 per cent alpaca may not produce the best result, not only for economic reasons, but for stability in processing. The blending of wool with alpaca is a practice that seems to be popular in both Europe and South America.

Conclusion

In the past few years, we have learned much about the characteristics and performance of alpaca. We are still learning.

We have had to face the fact that alpaca, while incredibly beautiful, is not perfect. The frustration of dealing with this recalcitrant fibre has, at times, been overwhelming. Fibre, which one day is running beautifully, can on the following day, wrap itself around rollers, grab where it shouldn't and fly around uncontrollably. Getting the ambient moisture content right is quite an art. The word 'static' strikes fear into the heart of all processors.

The problems of 'shedding' also have to be addressed. While the worsted spin has given us a wonderful softness in handle, it is disappointing to see fibres shed on to other fabrics being worn at the same time. We have experimented with different spins. Some have looked promising but, in each case, the resultant loss of handle has been too great to change our current process.

The Co-operative believes, as does the industry as a whole, that in the past we have too often made the mistake of selling our primary produce overseas, where it is value added and sold back to us. We are determined that all the benefits of value adding will remain in Australia. After all, we have a great eye for quality.

Shearing yearly? *You should be!*

by Gayle Dillon

I never had doubts that alpacas should be shorn yearly (even stud males) and this was confirmed recently.

We live behind the Gold Coast in Queensland and, each year in September-October, we shear our animals – as do most Queenslanders. We do this to keep our animals happy and healthy and we don't have heat stress this way. Our temperatures range from 5°C (lowest winter) to mid 30s over the hottest months. This year, we had one day that reached 40! So, I feel we are lucky. Not so lucky are those animals which are not shorn for one reason or another around Australia.

Pain and danger were hidden under two years' fleece growth.

We had the pleasure of buying four females from Victoria after the National Show and Sale. These animals had not been shorn in two years. Being transported to Queensland, they needed health certificates for insurance, blood tests for Johne's Disease and they had to be inspected by a government official (I'm not sure why!). This would mean, I thought to myself, a lot of handling for these alpacas.

They arrived in Queensland in excellent health, but I found one very nervous and not as friendly or happy as the others. I assumed this was just her nature.

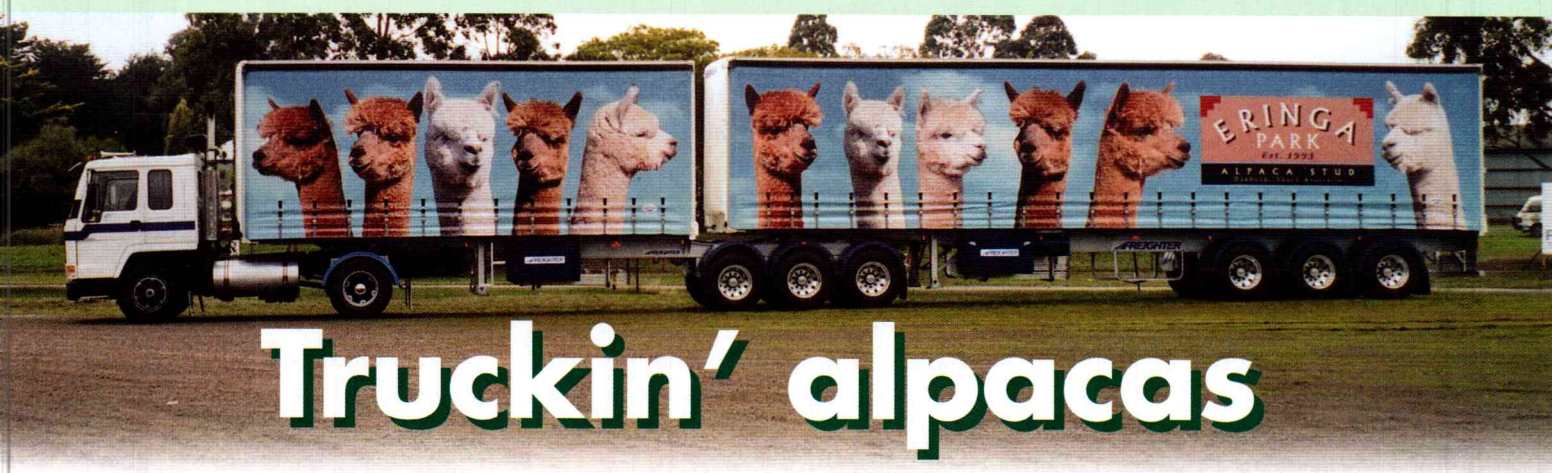
The day after they arrived, our shearers arrived for the 'big clip'. All went well till we started shearing the 'nervous' one. The shearer found a very thick piece of wire embedded in her fleece that ran from behind her shoulder, down under her front leg and around into her chest. It had actually pierced the skin at both ends. It took ten minutes to remove it. Scarring told us the wire had been there a long time. It also meant that each time she sat, the wire pressed into her chest and back. I felt so sorry for this young pregnant girl who, the day before, had turned two years old.

We sheared off 4.16 kilograms. The photo shows what can grow in two years.

Needless to say, she is a lot calmer and friendlier after a few months without pain.

Overlong fleece is not good to process or clean and it's not doing your alpaca any good.

Please, think again if you don't shear yearly or if you just trim or sculpture your stud males.



Truckin' alpacas

Eringa Park Alpacas in South Australia has certainly turned heads with the massive alpaca billboard. Pulled by a Mack or Kenworth prime mover, the National Express Australia rig normally travels the round trip: Adelaide-Melbourne-Sydney-Adelaide – with occasional extensions to Brisbane.

The eye-catching sign-writing has been exhibited world wide as an example of innovative Australian promotion. According to Matthew Lloyd, principal of Eringa Park Alpacas and a Director of National Express Australia, the $10,000 investment is paying off with much comment and steady enquiries.

'I cannot believe how many people call me to comment on what they have just seen driving along National Highway One,' said Matthew. 'This truck promotes my stud and alpacas seven days a week, 24 hours a day along Australia's most used highway, so it must be good for the industry.'

AAA National President, Ian Watt reports seeing the truck in the Southern Highlands of New South Wales eight months ago. 'I was absolutely bowled over! What a promotion, what an image – and it's all free!' he commented.

We agree.

Theory of colour inheritance in alpacas

By Elizabeth Paul

B.App.Sci., (App.Biology) R.M.I.T., Cert. Animal Technology, F.I.T.

The author wishes to thank Dr David Propert, formerly Associate Professor of Human genetics, Department of Applied Biology and Biotechnology, R.M.I.T., for his constructive comments and advice.

INTRODUCTION

Coat colour in mammals is almost entirely dependent on the presence or absence of the pigment, melanin, in the skin and hair. There are two distinct forms of this pigment: eumelanin (brown/black) and phaeomelanin (red/yellow).

Melanin is produced in granules by cells called melanocytes, which are concentrated in the hair follicles, the skin epidermis and the retina of the eye. Colour in these areas is determined by the size and shape, as well as by the type, number and distribution of the granules. The nature of the granules is affected by many factors, both internal and external. Colour inheritance patterns for small laboratory animals, particularly mice, and some larger domestic animals such as dogs, cats, horses and cattle have been intensively studied. Many of their genotypes and phenotypes have been described (Searle, A.G., 1968).

If a living cell is removed from an animal and examined under a microscope, the large, clearly defined nucleus can easily be seen. The nucleus is the control centre which directs all the activities of the cell.

The nucleus consists mostly of DNA (deoxyribonucleic acid), the hereditary material of life. DNA is formed into long threads, called chromosomes, which occur in pairs within the nucleus.

A gene is a very small segment of a chromosome which determines a particular characteristic of the cell. Since chromosomes occur in pairs, there are two sites where the gene may be found. These sites are called *loci* (singular, *locus*) and the two forms of the gene are called *alleles*. If the alleles are the same as each other, they are termed *homozygous;* if they are different, they are termed *heterozygous*. There may also be more than two alleles of a given gene and these are termed *multiple allelic series*.

Every cell of the animal (except for the sperm and egg cells) contains exactly the same amount of DNA and, therefore, the same chromosomes and genes as every other cell.

Each species of animal has a specific number of chromosomes called the $2n$ number: in humans, $2n = 46$, or 23 pairs of chromosomes. Of these, 22 pairs are called *somatic* or 'body' chromosomes and one pair is the sex chromosomes where an XX pair gives a female and an XY pair gives a male.

To illustrate the nature of inheritance, the process of sperm production in the sperm-forming cell of a sexually mature male will be described briefly.

At the start of the process, matching pairs of chromosomes come together within the nucleus of the cell. Each chromosome duplicates itself and divides into two identical halves along its length. This creates a group of four

The Proof is in the Progeny

Acheron Valley Alpaca Stud

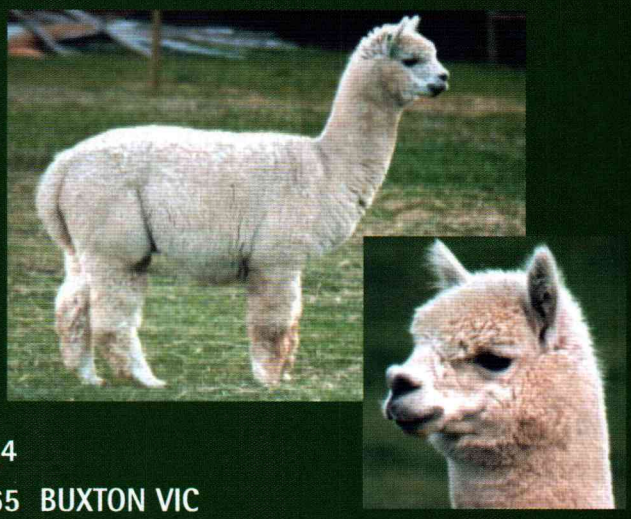
in conjunction with Mount Peerless Alpacas

Peruvian Primero

In his 1st season his progeny have confirmed his quality, winning over 50 individual ribbons, including 7 championship ribbons and 2nd place in the Sires Progeny Class at the Royal Melbourne and National Shows. The improvement that Primero can make in just one generation is exceptional. Over 80% of clients have chosen to remate to Primero – a sure sign of satisfaction.

Peruvian Primero

- Solid Light Fawn
- Fine, even, dense crimpy fleece
- Superb conformation & presence
- 65% solid fawn cria to date
- Live Cria guarantee
- Mobile or on farm matings
- Discount for group bookings



J & B Worcester	PH/FAX (03) 5963 7154
R & B Holland	PH/FAX (03) 5774 7365 BUXTON VIC
M Stout & R Ford	PH (02) 9560 1773 NSW/QLD FAX (02) 9411 2977

85.6% Black genotypes and 14.4% White genotypes.

Crossing all Brown genotypes with all Brown genotypes produced 83% Brown genotypes, 4.9% each of Red and Black genotypes, and 6.8% of White genotypes.

Crossing all genotypes with all genotypes gave progeny of 40% Brown genotypes, 30% White genotypes and 15% each of Red and Black genotypes.

An example of the method used is shown opposite (Example 1).

Actual results

The actual results were obtained from the Australian Alpaca Association *Herd Books* Volumes 2, 3, 4, 5 and 6. Only matings where both the parents' and the progeny's colours were recorded have been used. For this reason, AAA *Herd Book* Volume 1 was excluded from the survey, as were all imported alpacas.

Phenotypes of alpacas were assessed as follows: fawn and roan alpacas were assigned to Red; silver greys and blacks were assigned to Black; and browns and rose-greys were assigned to Brown.

White alpacas were assigned to White.

Multi-coloured alpacas were assigned according to the mix of colours listed. For example, a Dark Fawn/Light Fawn/White alpaca was assigned to Red, while a Dark Fawn/Medium Grey alpaca was assigned to Brown. A total of 14,535 actual matings producing progeny were assessed in this way.

All theoretical and actual results are summarised and compared in Table 2.

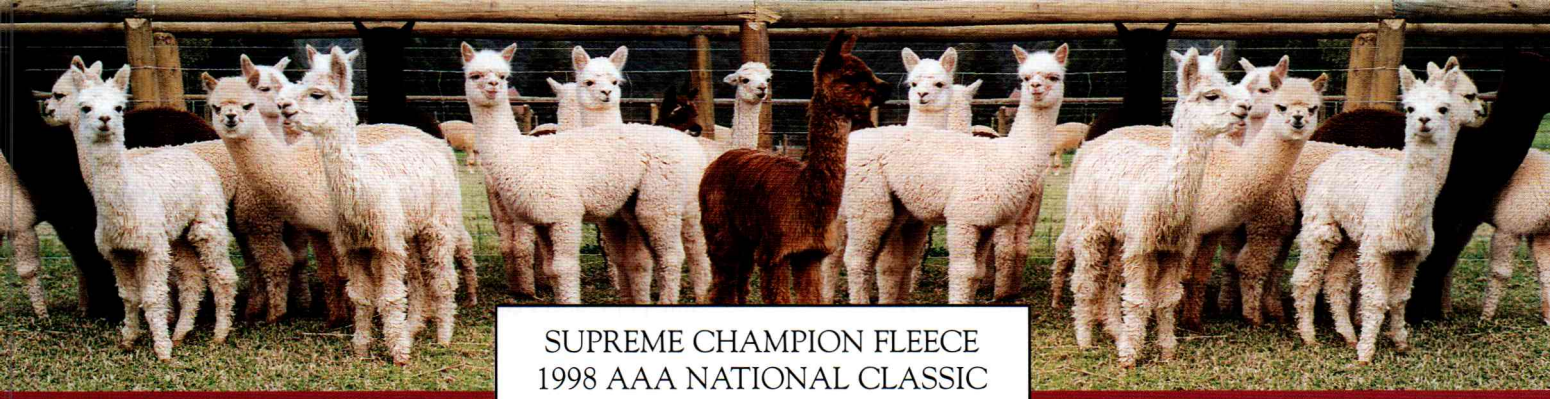
In order to form a base level of parent phenotypes, all imported alpacas listed in the AAA *Herd Books* Volumes 1-6 inclusive were assigned to the same phenotype groups as above, and the results summarised in Table 3.

Example 1.

	SIRE	x	DAM
Parent Genotype:	Rr Bb mm	x	rr bb MM
Parent Phenotype	White	x	White
Gamete Types:	RBm, Rbm, rBm, rbm	x	rbM
Cross:	**Progeny Genotypes**	**Progeny Phenotypes**	**% progeny Phenotypes**
RBm x rbM	Rr Bb Mm	Brown	25% Brown
Rbm x rbM	Rr bb Mm	Red	25% Red
RBm x rbM	rr Bb Mm	Black	25% Black
Rbm x rbM	rr bb Mm	White	25% White

Table 2: comparison of theoretical and actual results

Progeny Phenotype:	Brown	Black	Red	White	Total
Progeny Genotype:	(R-B-M)	(rrB-M-)	(R-bbM-)	(rrbb--,----mm)	
Parent Phenotype:					
White x White	301	95	365	1261	2022
% actual	14.9	4.7	18.0	62.4	
% theoretical	4.0	4.0	4.0	88.0	
White x Red	400	86	631	376	1493
% actual	26.8	5.8	42.3	25.2	
% theoretical	24.0	3.8	42.4	29.5	
White x Brown	572	133	359	270	1334
% actual	42.9	10.0	27.0	20.2	
% theoretical	56.3	9.3	10.0	22.0	
White x Black	245	231	111	187	774
% actual	31.7	30.0	14.3	24.2	
% theoretical	25.7	40.7	3.8	29.7	
Red x Red	263	20	989	97	1369
% actual	19.2	1.5	72.2	7.1	
% theoretical	0	0	85.6	14.4	
Red x Brown	1083	121	874	88	2166
% actual	50.0	5.6	40.4	4.1	
% theoretical	67.0	4.4	21.0	7.7	
Red x Black	345	115	116	49	625
% actual	55.2	18.4	18.6	7.8	
% theoretical	52.7	17.6	17.6	12.0	
Brown x Brown	683	123	149	34	989
% actual	69.0	12.4	15.1	3.4	
% theoretical	83.0	4.9	4.9	6.8	
Brown x Black	888	672	45	95	1700
% actual	52.2	39.5	2.6	5.6	
% theoretical	67.7	20.6	3.7	9.1	
Black x Black	245	1747	22	49	2063
% actual	11.9	84.7	1.1	2.4	
% theoretical	0	85.6	0	14.4	
Total Progeny	5025	3343	3661	2506	14, 535
% actual	34.6	23.0	25.0	17.2	
% theoretical	40.0	15.0	15.0	30.0	



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Windsong Valley Royal Inca	Windsong Valley Snow Legend
Peruvian Conquistador (Suri)	Aymara Talisman

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Table 3: phenotypes of imported alpacas

Phenotype Group	Brown	Black	Red	White	Total
No. imported alpacas	1700	1060	920	2384	6064
% Total imports	28.0	18.0	15.0	39.0	

Comparison of actual with theoretical results

Whites x Whites

Approximately 36% of actual matings produced coloured progeny, compared with a predicted result of 12%. There were more than three times as many Brown and Red progeny phenotypes as Blacks in the actual results. Approximately 62% of all White x White matings produced White progeny phenotypes compared with a predicted result of 88%.

Whites x Reds

The actual results agree with the predicted results.

Whites x Browns

A much higher proportion of Red phenotypes and a lower proportion of Browns than the expected results, appeared.

Whites x Blacks

The actual results produced five times as many Red phenotypes as expected, with a lower than expected proportion of Black phenotypes.

Reds x Reds

Almost 20% of the progeny born were recorded as Brown phenotypes where the model predicted none at all.

Reds x Browns

Twice as many Red phenotypes were recorded for the actual results as were predicted by the model.

Reds x Blacks

The actual results agree with the predicted results.

Browns x Browns

There were approximately three times as many Red and Black progeny phenotypes in the actual results as expected.

Browns x Blacks

Twice as many Black phenotypes were produced as expected.

Blacks x Blacks

A large proportion of Brown phenotypes were produced in the actual results where none were predicted.

All x All

Actual results gave over 80% coloured progeny and 17% white progeny, compared to predicted results of 70% Coloured phenotypes and 30% White phenotypes.

Problems and difficulties

1. The theoretical model assumes that all possible genotypes are present in equal numbers in a population and that all have equal opportunity to cross and produce progeny. This, of course, never happens, either in nature or in a controlled breeding operation.
2. The population is probably very heterogenous already. The long gestation time and single births mean there are difficulties in determining the genotype of any given animal.
3. Colour pigments in alpacas do not appear to have been assessed by scientific or technological methods. Human perceptions of colour, shade and intensity vary widely and may account for some of the actual results being different from the predicted results.
4. Colours as recorded in the AAA *Herd Books* are not always accurate; some colours have been changed between consecutive *Herd Books*. There is also the possibility of animals changing in shade with maturity.
5. Mating records are not always accurate. There will always be one that 'got over the fence!'
6. Not all matings and progeny born have been recorded in the *Herd Books*.
7. Arithmetical errors in calculations may have occurred.

However, taking all these factors into account, it would seem reasonable to draw the following conclusions:

1. There is good correlation between the theoretical and the actual results;
2. A significant number of white alpacas appear to be carrying colour genes;
3. Extrapolating from the results in Table 2, crossing a white alpaca with a coloured alpaca is approximately three times as likely to produce a coloured progeny as a white one. Crossing two coloured alpacas will almost certainly result in coloured progeny.

More research into actual matings and pedigrees would enable genotypes to be more accurately assessed. Colour *Herd Books* would make this faster and easier. Of particular value would be records of multiple progeny to the same pair of parents. Research into the nature of the pigments would also be of great interest.

Further notes on White alpacas

In the above model, White genotypes carrying colour genes will produce some Colour phenotype progeny when crossed with White genotypes carrying M genes. These White genotypes may be termed 'carrier' Whites. A cross between a carrier White genotype and an albino White genotype will only produce White phenotype progeny.

There is anecdotal evidence in the industry that white-fleeced alpacas with pigmented skin, when mated together will produce the occasional coloured progeny – or even twins (Hand, H.)! White alpacas with permanent pink skin, when mated together, produce pink-skinned, white progeny. This may be explained in terms of the model by assum-

ing that carrier Whites with colour genes represent white alpacas with pigmented skin, and that carrier Whites with M genes represent pink-skinned white alpacas. (Some pink-skinned cria have pigmented spots on their lips or eye-rims which grow and spread as the animal matures.) An albino genotype would represent a true albino alpaca with pure white fleece, pink skin and pink eyes. Albinos occur in low frequencies in many species of animals, although rarely, if at all, in some.

It is interesting to note that dark-eyed and blue-eyed animals with white coats also occur in many different species. In dogs, dark or 'ruby' eyed whites are thought to be produced by the presence of a 'chinchilla' gene. This gene has a paling effect on red/yellow pigment, causing red dogs to have biscuit, fawn or cream to near-white coats. Dark-eyed white Pekingese dogs, when crossed, have apparently produced coloured litters (Little, C.L., 1973). A similar effect is found in horses, where a 'cremello' gene acts on red/yellow pigment to produce cream or near-white, dark- or blue-eyed horses, called 'cremellos' or 'perlinos' (Sponenberg, Dr P., and Beaver, B.W., 1992).

The situation in alpacas may well be analogous with these examples.

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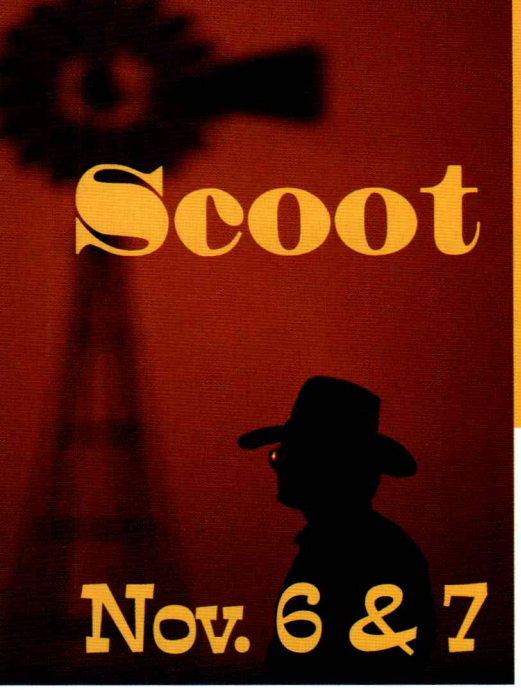

Scoot yer boots to Tamworth

There are convincing arguments to support the view that the Association's Annual National Show & Sale is long overdue for country exposure. And plenty of breeders are agreeing that this year's venue, Tamworth, could not have been a better choice.

Two breeders who need no prompting to extol the virtues of country in general, and Tamworth in particular, are Coolaroo's Janie Hicks and Noosa Alpacas' Chic Wilson.

After all, alpacas are country – and where better to show off and promote alpaca than in a major regional centre. Chic says, 'You're looking at farming communities... who have the acreage, access to labour and the husbandry knowledge necessary to successfully raise alpacas.'

The choice of Tamworth is very popular with Queensland breeders ('the fastest growing state for alpacas,' Chic comments, in passing). The city is between two of the fastest growing population centres in Australia – an excellent example of a thriving, modern farming community.

Tamworth Regional Entertainment Centre, the focus of the city's annual Country Music Festival, is close to the CBD, on the New England Highway. It boasts excellent indoor and outdoor facilities with large floor space and seating for over 5,000.

There is good accommodation available at Tamworth, and for those coming from the southern states, there are overnight stabling facilities at the Parkes Showground on the Newell Highway some 5-6 hours' driving time from Tamworth.

The National Show, to be held on Saturday 6 November, is expected to attract the cream of Australian alpacas.

Animal exhibits will be judged by Jodi Robinson, from the United States. A judge since 1990, she has officiated at numerous shows in the U.S. and Canada, including the AOBA national show. In 1994, she worked with Dr Julio Sumar to evaluate more than 250 huacaya and suri alpacas for the first Peruvian Sales to be held in America. She has a small ranch in New Mexico.

Cameron Holt, Melbourne College of Textiles, will judge the fleeces. No stranger to AAA members, Cameron is well known for his work with specialty fibre. He was fleece judge for the 1996 National Show and has judged all over Australia and overseas.

The Saturday night dinner will feature live entertainment with Pat Drummond, described by Eric Bogle as 'an original and witty songwriter'. A regular performer at folk, bush and country music festivals, he won the Male Vocal of the Year at the Australian Bush Music Festival, 1993 and was a Grand Finalist at Tamworth in 1994. His repertoire of comic and serious songs includes *The Sao Song* and *Vertelli's Wire*.

Sharing the bill is Len Knight, poet, singer and songwriter who won a Silver Medal for Recitation at the Tamworth Country Music Festival in 1997. He has performed with such well-known personalities as Ted Egan, Jim Haynes, Lucky Starr and Frank Ifield.

What would an AAA dinner be without an auction! Up for the highest bidder will be an alpaca trailer manufactured by G & C Manufacturing in Orange and donated by proprietors, Alan and Margaret Goodacre. Bring your cash!

As we go to press, the process is under way to select quality animals for the National Auction. The National Sale catalogue will display the final selection of quality animals, the result of many hours travelling, inspecting and evaluating by the AAA team.

The National Show & Sale is always a very important event on the alpaca industry calendar. This year's is particularly so. The first to venture into the heart of farming country, it reflects a new high in industry confidence and maturity. Those showing animals and fleeces and those bringing their merchandise to sell and display will be the industry's showcase. Those offering animals for sale will access a new group of potential buyers.

The event will have high curiosity value as there's no doubt that most of our visitors will have had little or no exposure to alpacas. It's an opportunity for the industry to welcome, educate and enthuse country people who are in the forefront of modern farming. That's a challenge that should make every one of you don yer boots and scoot up to Tamworth.

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LETTERS TO THE EDITOR

Please address all letters to: The Editor, *Alpacas Australia*, C/- PTW Desktop and Design Unit 9, 663 Victoria Street, Abbotsford Vic 3067

Further to an article in *Alpacas Australia,* No 27, I would like to comment on my experience in feeding of cria.

Over 10 years and averaging 100+ cria per year on our property, we have had a number of cria requiring supplementary feeds. Having tried many brands of milk replacer, we have found all to have been equally successful. *The quantity of feed must relate to weight of animal* (see *Alpaca Breeders Birthing Handbook*, available through the AAA.)

In my experience Di Vetelact used at full strength is an excellent milk replacer. It can be gradually increased to double strength, without increasing fluid volume, providing a greater intake of nutrients, and improved weight gain.

It is imperative that the cria be kept with the mother and, as the cria's strength improves, the mother should be able to take over. I have seen cria, who were unable to suckle for 10 days, eventually be fed by the mother. Total success is getting the cria 'back onto mum'.

Carolyn Jinks, Benleigh Alpaca Stud

I would like to make a few comments on the use of milk replacers in alpacas after reading Sheila Woolf's article ('The course of alpaca true love never does run smooth') in *Alpacas Australia*, issue 27. The article described the rearing of a newborn cria on milk replacer after its mother, that had an abscessed udder, rejected it at birth.

All efforts should be made to give the newborn cria colostrum, the first milk produced by the dam after birth. Correct colostrum feeding is the single most important management practice before weaning. Colostrum contains nutrients (fats and sugars that provide energy, proteins, vitamins and minerals), antibodies and other proteins (that also protect the cria against disease) and many other growth factors. If the dam rejects the cria, every attempt should be made to milk colostrum out of the dam. Alternatively, feed frozen colostrum (collected from a dam who has lost a cria at full term) or colostrum from another species (beware of disease transmission). Plasma transfers are a very useful aid to supplement the cria with antibodies.

Initially, when determining how much milk replacer to feed, aim to feed a minimum 10-15% of the animal's body weight as milk. For example, aim to feed a 4.5kg cria 450-675mL (ideally as colostrum on day 1-3, but normal milk replacer if colostrum not available). Feed the cria 4-6 times daily. Encourage the cria to suckle from its dam by allowing it to develop an appetite in between your supplementary feeding. Always have fresh water available at cria height. Leave the cria with its mother, or a group of alpacas if orphaned, and intervene as little as possible. Persevere for 7-10 days to mother-up dams that reject their crias, as any milk that the cria obtains from its mother is a bonus and alpaca socialisation is essential. Bottle reared alpacas (male and female) that bond to humans rather than alpacas invariably become a danger to handle as they mature. Monitor body weight, body condition score and appetite and increase the volume fed per day accordingly. Seek help from your veterinarian if necessary.

When feeding from a bottle, ensure you hold the bottle upside down and that the cria's neck bends as it would when drinking from its dam. Observe crias nursing on their dams to learn what is a normal suckling posture. This posture elicits a reflex in the cria so that milk flows directly to the third compartment (true stomach) and by-passes the first and second compartments of the stomach.

When normal alpaca milk reaches the true stomach, it mixes with the enzyme rennin and forms large clots or curd (as rennet tablets clot milk when making junket) and a fluid or whey portion. The whey contains easily digested sugars and moves quickly (within minutes) to the small intestine for digestion and absorption. The milk clots contain fat which is harder to digest, and remain in the true stomach (for a couple of hours) and are broken down gradually and slowly released to the small intestine for further digestion and absorption.

Bottle-fed milk may fail to reach the true stomach directly. If this occurs, milk will ferment in the first compartment, leading to poor digestion and gas production. This can manifest as a pot-bellied, poorly growing cria.

A milk replacer that is fed under-strength fails to clot in the true stomach. This means that it remains in liquid form and moves rapidly to the small intestine. The cria is unable to digest this fluid and diarrhoea will develop. A milk replacer that is fed over-strength contains excess sugars which can draw fluid into the small intestine and cause diarrhoea. *Avoid feeding under-strength milk at all times, even when starting the cria on milk replacer.*

Oral electrolyte solutions, such as Vytrate® and Lectade®, are essential when treating cases of diarrhoea. Speak to your local veterinarian for advice on their use. Use those electrolytes that are designed for calves and lambs. Never mix milk with electrolyte solutions in the same bottle. The milk will become diluted and will not clot in the true stomach and the liquid will contain too many sugars. Both scenarios will readily lead to diarrhoea. Feed electrolyte solutions at least 2-3 hours before or after normal strength milk.

Avoid changing the type of milk replacer as the cria will take time to adjust to the new formula, risking diarrhoea. Have adequate milk replacer powder on-hand, and give your supplier plenty of time to order more as needed. I know of crias being successfully raised on Di-Vetelact®, Barastoc Lamb & Kid Milk Replacer®, Biolac®, Wombaroo® and powdered cows' milk available from the supermarket. *The way in which the milk replacer is fed determines its success or failure, not the brand of milk replacer.*

More information on this topic can be found in the 1998 International Alpaca Industry Conference Proceedings on pages 67-70 in an article titled 'Nutrition of the alpaca', written by Dr Nick Costa and myself.

Jane Vaughan BVSc (Hons), MACVSc (Ruminant Nutrition)

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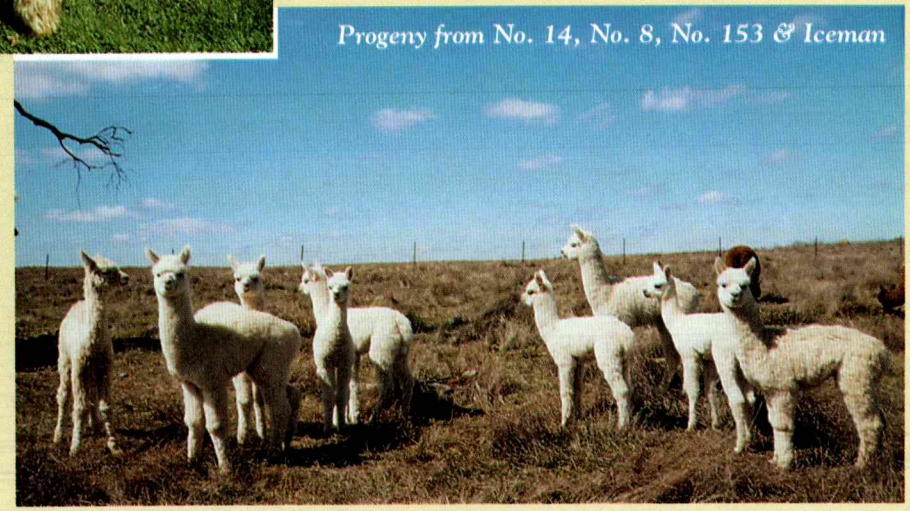

Progeny from No. 14, No. 8, No. 153 & Iceman

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New Zealand Conference

by Carolyn Jinks

Impressive! That was the first thought that came to my mind as we arrived at the Karaka Function Centre as guest speakers at the 1999 ALANZ (Alpaca & Llama Association of New Zealand) Conference.

The venue, close to Auckland, is where many world famous thoroughbred horses are auctioned. The entrance walls are lined with photographs of these magnificent horses and the prices they achieved. The prices for alpacas seemed quite insignificant in comparison!

The three day program, which included the AGM, provided the 70+ delegates with a wide range of Seminar topics, an opportunity to network, socialise, and purchase from the superb range of top quality alpaca garments made in New Zealand.

With the geographic complications of one country being divided into two islands, it was rewarding for the co-ordinator Dan Bloom, that members from all areas and veterinarians from various locations made the effort to be involved.

The ALANZ committee had approached Dr Ewen McMillan, Cameron Holt, and Allan Jinks earlier this year to be the invited overseas guests.

The NZ speakers were Dr William Vivianco, a Peruvian with an astounding resume; Hugh Black from New Zealand Agri-Quality; and South Island breeder, Russell Gent who demonstrated alpaca husbandry and shearing techniques.

Prior to the event, Dan Bloom had created an ALANZ website which is updated regularly and gives information about planned activities. For those interested, check out the site on www.alanz.org.nz

Saturday 5 June dawned bright and clear after our arrival in Auckland, the previous day being wet and drizzly.

The opening program featured Dr Ewen McMillan whose address covered all aspects of alpaca care: female reproduction, mating, pregnancy testing, and care of the pregnant female.

My contribution was 'Normal Birthing Expectations' and basic cria care, which Ewen then followed with neonatal problems, vaccinations, nutrition, and vitamin treatments.

Following a sumptuous lunch, William Vivianco, who is the manager of the Animal Reproductive Technologies, Technology Development Unit at the AgResearch Ruakura Research Centre, gave an interesting lecture on alpaca reproduction and embryo transfers in various livestock. Vivianco was followed by Hugh Black, who was both entertaining and informative on a number of domestic matters relating to alpacas.

Facial excema and Sporidesmin were issues which breeders, particularly in the North Island, need to be aware of, and it was stated that up to 70% of sheep and beef cattle in the North Island are affected by this problem to varying degrees.

In our area (near Geelong, Vic), we do not have to cope with this, but I found it fascinating as he demonstrated how to do spore counts, recommending that, during danger periods, counts would need to be done daily.

Delegates then attended the AGM, while a 'Vets Only' segment was conducted by Ewen McMillan. This covered a broad range of veterinary applications including operations and anaesthetising alpacas. Ewen had asked me to speak with the vets on 'Expectations of Breeders', based on the education sessions that final year veterinary students from Melbourne University attend at Benleigh each week.

The veterinarians completed their program with a hands on period of ultrasounding animals. It was interesting to discover that many pregnancies in New Zealand are still being diagnosed by progesterone assay, and the pitfalls of this method were clearly identified by Ewen.

As with our Australian conferences, dinner was a welcome chance to relax, meet breeders and discuss issues affecting the industry.

Sunday morning brought a change of focus: from animal to fleece. Cameron Holt from the Melbourne College of Textiles led the delegates through a step-by-step program covering all aspects of fibre growth and development, fleece characteristics and understanding the meaning of terms such as medulation and micron.

The afternoon session reverted back to animals with Ewen showing slides on deformities. This was followed with a practical session by Allan Jinks on conformation of animals, ideal legs, selection of animals, and fibre density. The day was completed with a 'hands on' session for fleece evaluation.

By Monday morning, everyone knew each other and the benefits of learning and working together were apparent. Friendships were formed.

The program for the day was a Show and Judging Clinic organised by Allan and myself.

This covered every aspect of planning prior to taking animals to a show, a mock show with all delegates participating, and a discussion of what judges look for.

In our 'Aussie' system, the blue ribbon is first prize, red second and white third, so after the first group were 'judged', I asked the first placed animal to be led around the ring – off went the red ribbon winner!

Not wanting to embarrass anyone and thinking I may not have explained the show protocol clearly, we tried again and, yes! again the red ribbon winner led the group.

In New Zealand red is first!

To date only one show has been held in New Zealand and this was judged by a vet, but with the enthusiasm and confidence of participants, I feel it will not be long before this changes.

The final stages of the weekend were a demonstration of shearing and nail trimming and a further practical fleece session led by Cameron.

During the weekend, I interviewed three of the delegates.

The first was a non alpaca owner. At the end of day one, she was definitely going to enter the industry. In fact, I never saw her again so, perhaps, she was already off buying!

The second was an owner who had been in the industry a short time and currently had his stock agisted at two farms. He was eager to learn as much as possible about every aspect of the animals and fleece, with the aim of eventually taking them 'home'. He was committed to the alpaca industry and intends to put effort into its growth in New Zealand.

Asked whether the weekend had met his expectations, he claimed that it had far surpassed what he had anticipated.

The third person I questioned had owned alpacas for a number of years and was a trade stall holder. Part of his hopes for the weekend was to market the shearing table that he had earlier demonstrated.

No doubt delegates at all conferences have various reasons for attending: consolidating knowledge, learning, marketing. Hopefully, they are a beneficial experience for everyone.

Congratulations must go to those who planned the event. Field days have been held in New Zealand, but the Conference was a first! The enthusiasm and eagerness to learn was tangible.

Questions revealed the dedication of breeders who are keen to be aware of current attitudes to herd health, management, improvement of fibre and development of the industry.

It was a privilege and pleasure to be a part of the three day Conference.

Photographs
Left: ALANZ Conference venue.
Top: Allan Jinks directs the 'mock show'.
Right: Maggie Sewell (centre) and her friends in front of her trade display.

Far left: (from left) President Dennis Spinks, Vice President Peter Boyce and Treasurer Ann Boyce presenting Prize for Best Senior Alpaca in Show.

Left: dancers from Easter Island, South America.

Below left: some stars of last year's festival.

Below right: dancers from Peru, South America.

Charles Ledger Alpaca Show & South American Festival

On Sunday 25 October 1998, the Liverpool Regional Museum hosted the largest and most successful regional alpaca show in Australia which attracted an estimated 6,000 visitors. The alpaca show and South American festival proved to be a unique cultural and historical event.

The success of this joint show and festival was, no doubt, due to the extraordinary partnership between the Australian Alpaca Association, the Liverpool Regional Museum and the South American community of South Western Sydney. The event focused on one significant factor - the celebration of the arrival of the largest flock of alpacas from South America in 1858 to the site of the first Cumberland Agricultural Show in January 1858.

Throughout the day, there was alpaca judging and the Sydney Region of the AAA showed off 170 animals. Members from the Sydney Region and Liverpool Museum staff and volunteers added to the colour of the day by dressing up in 1850s period costume. South American food, music and dancing were ongoing throughout the day and were very popular with all the visitors. There were also South American craft stalls and alpaca wool spinning. The food was so delicious that the stalls ran out!

The Museum offered tours of historic Collingwood House and had prepared an exhibition about the Charles Ledger story – the man who introduced alpacas into Australia in 1858. The Museum displayed a skeleton of one of Ledger's original alpacas which had been found in the collection of the Australian Museum. Also on display were the original watercolours of Ledger's epic Peruvian journey loaned from the Mitchell Library and some of his original letters from the Archives Office of NSW.

Collingwood, Liverpool, accompanied by about a dozen Peruvian shepherds. A birthday cake was cut by Mr Paul Lynch, Member for Liverpool, to commemorate 140 years of alpacas in New South Wales. The Royal Agricultural Society (RAS) joined in, to celebrate their 140 years involvement with Collingwood –

Alpaca farmers came from all over the state – particularly the Southern Highlands, South Coast (Nowra), the Hills District (Glenorie), Maitland, Foster, Taree, Blue Mountains, Liverpool, Penrith and Mudgee. Representatives from the Peruvian and Bolivian consuls, local government and the RAS also attended the show and festival.

Visitors to the show and festival came mainly from Western Sydney – Liverpool, Hinchinbrook, Bossley Park, Macquarie Fields, St Marys, the Campbelltown area, Smithfield, Parramatta as well as the wider Sydney area.

All parties were thrilled with the successes of the day – in raising the profile of the alpaca industry and its association with Charles Ledger and Collingwood; in a celebration of the rich and diverse South American culture of South Western Sydney; and the historical link with the Royal Agricultural Society.

The second Collingwood Alpaca Fiesta will be on the 26 September 1999 at the grounds of Collingwood House and the Liverpool Regional Museum.

For further information please contact the Collingwood Alpaca Fiesta Organising Committee c/- Ann/Angela at the Liverpool Regional Museum on ph. (02) 9602 0315

Liverpool Regional Museum

It's a gas!

Those who were present at the launch of the new industry promotional video (National Conference, Glenelg) will know just how good it is.

The concept for 'Fibre, Fashion & Industry' was developed by Benoit Ernst. And the concept is excellent. The animals, their end product and the industry growing up around them are skilfully interwoven. This is very much a look at the Australian alpaca industry in the round, and it will be as relevant to overseas audiences as it is to Australians.

An excellent showcase for Australia, the video takes the viewer to a host of superb locations. The opening scenes, in Sydney's Domain, are superb. The venue's historical significance, so much associated with Ledger's ill-fated attempt to establish the breed in Australia last century, sets the context for the story to follow.

For those who don't know her face. Overseas readers maybe?? TV personality, Rebecca Gilling (pictured) is the narrator and anchor for the entire production. This is one professional woman. She is unmistakably Australian; as a breeder, obviously at home with her subject; and she has identified precisely the style (voice, face, body language) that most effectively complements the rich visual impact of the production.

The credentials of the Australian industry are skilfully emphasised by key industry people. Carl Dowd, Chairman, Maggie T Corporation, is a relaxed and effective endorser of the qualities of alpaca fibre.

In interview sequences, Jan Maude, a Director of the Alpaca Co-Operative and Ian Hardy, a Director of AAFMO present well-contrasted aspects of product development and marketing.

Victorian Premier, Jeff Kennett is captured on camera opening the Elite Fibre Australia Mill at Geelong in 1997. And Elite Fibre Director, Alan Hamilton, good-naturedly defends his sanity when Rebecca asks him whether people thought he was mad to start up a fibre processing plant.

This is deceptively relaxed presentation that packs a power of information about the Australian alpaca industry.

Blue Grass Alpacas

SUPREME CHAMPION FLEECE

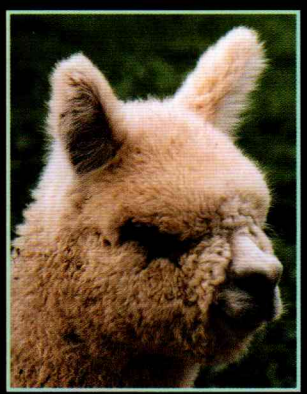
Benleigh Ringleader

Sire:
Purrumbete Inti

Dam:
Purrumbete
Sweet Freedom

18.4µ, 3.6 s.d., 19.6 c.v. – 0.6% of fibres over 30µ

Supreme Champion Fleece
Sydney & Canberra Royals '98
Stud Fee: $1,000



Introducing
Blue Grass Leading Lady

Supreme Champion of the Charles Ledger Alpaca Show 1998 at 6.5 months of age

Introducing
Blue Grass Liebling

Photography: Portfolio, Young NSW

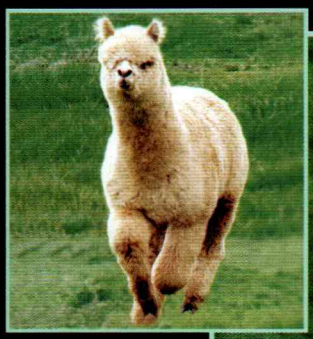
Whole herd tested JD negative

Arthur and Julie Mavros "Tulangi" Kenyu Road, Boorowa N.S.W. 2586 Tel/Fax: 02 6385 3543

Blue Grass Alpacas

THE CHAMPION OF CHAMPIONS

Shanbrooke High Society



Sire:
Purrumbete Ledgers Dream

Dam:
Purrumbete Flamingo Gold

18.8μ, 3.9 s.d., 20.7 c.v. – 1.1% of fibres over 30μ

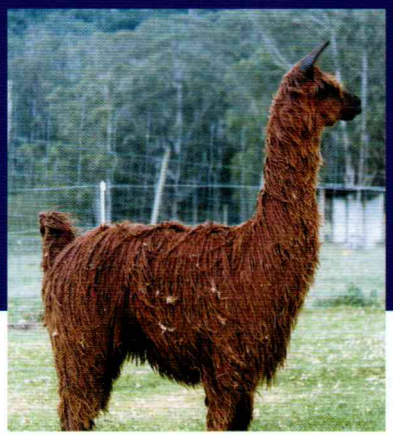
National Supreme Champion
World Record Price $190,000

This male has an excellent conformation and is extremely well covered with a dense even fleece which extends under the belly and up the neck to the bonnet. The fleece has a merino sheep-like quality which will increase the fleece weights of his offspring The well formed staples are boldly crimped, whilst soft and lustrous. He is the type of animal we are looking for to sire future champions.

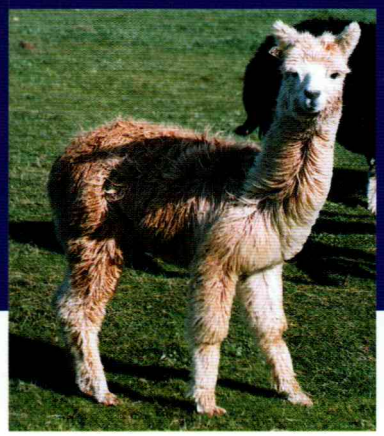
Bill Robbins, National Judge (Nov. '97)

Stud Fee: $1,500

Prize-winning suri yearling
(suri x huacaya)
Sire: good suri
Dam: average/poor huacaya



Prize-winning suri
(suri x huacaya)
Sire: good suri
Dam: average huacaya



Very good suri cria
(suri x huacaya)
Sire: average suri
Dam: good huacaya

Outstanding suri cria
(suri x suri)
Sire: excellent suri
Dam: very good suri
Note lustre and character in neck

A pot of gold at the end

By Sandra Keane, Pinjarra Alpacas (Chair, Suri Breed Standards)

Several years ago, a couple of my agistees (in particular, Ken Madl) and I started experimenting with suri-huacaya crossing. We were prompted as much by the dream of restoring the colour to the dwindling world suri herd as improving lustre and reducing medulation in our huacaya fleece. The latter practice may come as a surprise to some but if the reports we've heard are true, it has been carried out with obvious success by some of South America's well-known alpaca breeders. Because of our success in achieving both our aims and my ongoing interest, I gave a talk on this subject at the Suri Information Day in December 1998. While gathering information for my talk, I unearthed some interesting facts.

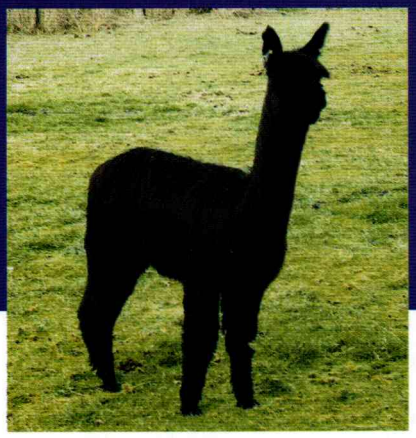
Unfortunately, very little is known about the origin of the suri or the huacaya. Some research suggests the suri evolved from the vicuna. What we do know is that suri and huacaya (together with llama) have been interbreeding for thousands of years so it is fair to assume that most modern day suri and huacaya are a composite of both. We should not confuse them with so-called 'pure' livestock breeds bred in total isolation from one another. Therefore, I shall refer here to 'crossing types' as we are breeding two alpacas with different fleece 'types' rather than crossing two distinctly different breeds.

As with the origin of the alpaca, little is known about its genetics. We believe that each alpaca has thousands of genes. These are arranged on chromosomes. All camelids have 37 pairs of chromosomes and, at fertilisation, random pairing occurs with each parent contributing half the complement to the new embryo. How these genes interrelate is complex. Simplistic Mendelian formulas, which once appeared useful in predicting characteristics, may not be as reliable for predicting fleece type. Most characteristics are controlled by many genes, often linked, and that the mode of inheritance is much more complicated than we presumed a few years ago.

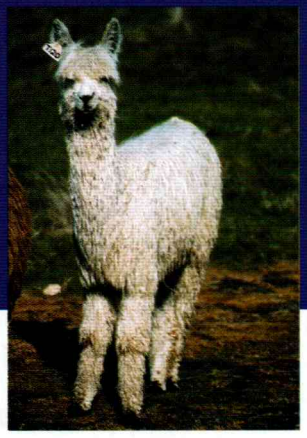
There are simply inherited traits influenced by only a few genes, highly complex *polygenetic* traits and genes which act as 'diluters' or 'modifiers'. And they're just the ones I can think of! No research that I know of has yet been done on the important genes that control specific fleece characteristics such as crimp, lustre, density, fineness and staple length. These are polygenetic traits – independent genes that collectively affect a characteristic. To breed a first-rate suri (or huacaya), selecting for these traits is essential. The diluters or modifiers complicate matters further by affecting the resulting phenotype, e.g, colour expression.

The Carrick and Ponzoni theories of suri x huacaya genetics

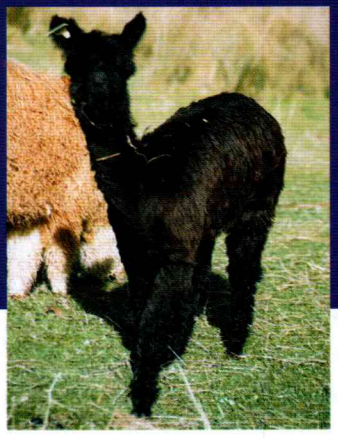
We are fortunate to have had research undertaken by Australian geneticists which has provided the surprising evidence that the suri appears to be dominant over huacaya. Until then, it was commonly held that the huacaya was dominant. No doubt, this was a result of the suri's low frequency in the alpaca herd, attributed to a variety of reasons, including its failure to thrive in extreme Altiplano temperatures and earlier active selection against the suri



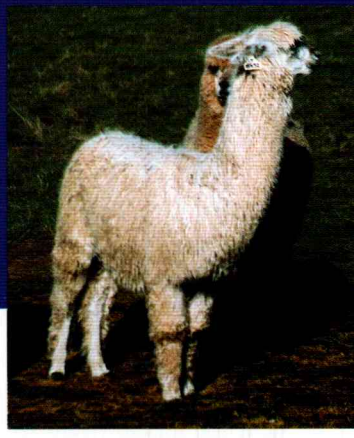
Excellent suri weanling
(suri x huacaya)
Sire: good suri
Dam: good huacaya



Excellent suri weanling
(suri x huacaya)
Sire: excellent suri
Dam: excellent huacaya
Note the pencilling down the legs and lustre



Very good suri cria
(suri x huacaya)
Sire: good suri
Dam: average/poor huacaya
Note lustre and pencilling



Average suri yearling
(suri x suri)
Sire: good suri
Dam: average/poor suri
Lacks lustre and lock definition

of the Chilean rainbow?

by a peasant-based handcraft industry for which suri fibre was unsuitable.

The first paper I read on suri genetics was Dr Mick Carrick's *Alpaca Breeds and Crosses* dated 7 March 1996. Dr Carrick, a geneticist, is Head of Livestock Improvement, Dept. of Genetics, Victorian Institute of Animal Science. The second was Dr. Raul Ponzoni's *Phenotypes Resulting From Huacaya by Huacaya, Suri by Huacaya, and Suri by Suri Alpaca Crossing* published a short time afterwards. Dr. Ponzoni, also a geneticist, is Principal Research Scientist, South Australian R & D Institute. Both papers have appeared in various publications in Australia and the U.S.A.

Carrick's paper carries a disclaimer that little is known about alpaca genetics. He cautions that his notes are the result of theoretical considerations and speculation: an opinion only. He is cautious about his conclusion (which is the same as Ponzoni's) that the simplest explanation of the apparent phenotypic differences in suri x huacaya crossing is the result of a single gene locus with two allelic variants, one recessive to the other. *But he has two reservations.*

The first is that the gene locus could be a haplotype (group of genes) which can behave differently to a single gene, producing different results. Ponzoni also agrees on the possibility of a haplotype locus. I'll refer back to this later.

The second is that Carrick believes the 'Chilenos might be right to grant a third phenotype' (*Chilenos* are known in the U.S.A. as the *chili* type) because the S and s genotypes might be only partially dominant (more on that later as well).

Ponzoni also notes anecdotal information about a third type, 'chili', which is not dealt with in his paper. Ponzoni has referred to the possibility of a *third* allele.

I think there has been a tendency to overlook these other possibilities in the surge of excitement over the single dominant gene theory and the possibilities it offers to convert a coloured huacaya herd to a coloured suri one. But the anomalies that we are seeing in the progeny confirm that the mode of inheritance may not be as straightforward as we thought.

I spoke to Dr. Ponzoni, prior to his paper being published, to find out to which particular 'gene' or group he was referring when he talked of a 'single dominant gene'. Dr. Ponzoni explained that he had not examined any of the fleeces, only the records from five breeders. The records merely indicated if the cria was registered 'suri' or 'huacaya', as determined by the breeders. If we wanted to know more about the gene which controlled, say, lustre, a polygenetic trait, this would require a lot more research. Polygenetic traits are not simply inherited (i.e. 'either/or' traits) but are extremely complex with no single gene having dominance. Dr. Ponzoni clarified this point further during a recent conversation. The 'simply inherited single dominant gene' he referred to, he said, acted as an *overrider* gene, i.e. it has no control over specific polygenetic fleece characteristics such as lustre or micron.

This fits in with my own experience. We know that a homozygous suri (i.e. one that is homozygous as far as fleece 'type' is concerned) will produce a suri every time when partnered with a huacaya. If a single dominant gene controlled fleece type, and this homozygous suri parent exhibited outstanding fleece characteristics, the offspring would all possess

the same degree of lock architecture, lustre, fineness, density, staple length, etc. (Also, the darker suri cria would be equal in quality to the whites or light fawns. Have you wondered why this doesn't happen when using the same suri sire?) Well, if it were as easy as that, we'd all be making a fortune producing magnificent coloured suri. The fact is, it's not! At my farm, the first-cross-type offspring vary and could be grouped as excellent, good or average. The coloureds we've produced include black (four so far), grey (even rarer than black), brown with black points, gold, fawn and white. These are progeny by at least six different suri sires, mostly coloured. The sires used are both homozygous and heterozygous as far as fleece 'type' is concerned, vary in quality, and range in colour from black, brown, fawn through to white. The better the sire and dam, the better the suri produced.

The reason why our first cross-type progeny are not of equal quality is due to other genetic factors such as polygenetic traits, modifiers and other genes expressed only in suris. A first-rate suri stud sire should exhibit the desired suri traits of lock architecture, lustre, staple length, low medulation and density. As polygenes governing fleece characteristics are extremely complex with no single gene having dominance, a sire expressing these may throw some or most, *but not necessarily all of them or in equal proportion in each of the offspring.* Because each parent contributes *half* the complement of genes to the embryo, the result will depend on whether the traits (such as the polygenes) expressed phenotypically in each of the parents are dominant or recessive. Only successive breedings will provide an indication which phenotypic traits throw 'true' (i.e. are genotypic) from a particular sire.

Homozygous or heterozygous (in fleece 'type')?

Take care that you don't confuse the overrider gene which governs fleece *type* with the polygenes which govern fleece *traits.* Several of the champions winning major shows are out of huacaya dams sired by heterozygous suris. These sires may throw the occasional huacaya but they obviously excel in the desirable suri fleece traits and pass them on to their offspring, i.e. they are probably 'homozygous' as far as many of their fleece traits are concerned. What we generally mean when we talk of a suri sire being 'homozgyous' is its ability to pass on the suri fleece *type,* not suri fleece *traits.* If we believe in the dominant gene theory, then theoretically, two suri parents regardless whether they are heterozygous or homozygous can produce homozygous offspring (the ratio from Ss x Ss, SS x Ss and SS x SS matings is 25-100%). But, if the parents are inferior quality suris, the homozygous suri produced will be inferior as well and will contribute poor quality genetics to his offspring. Whilst dominance in fleece type is important in producing suris out of a huacaya herd, dominance in fleece traits is more important, unless your aim is to produce mediocre suris. That's the dilemma we're faced with in our selection of a sire. Factors which persuade us in favour of one sire over another will range from colour, homozygosity of fleece type, the quality of the fleece, conformation, etc. to its accessibility. At this early stage, there is probably no more than a handful of such gems which fulfil all our requirements.

Huacaya progeny from one or two suri parents

When a huacaya type is produced from one and especially two suri parents, we would expect it to exhibit some suri fleece traits such as lustre, staple length, low medulation, etc if this is expressed in the suri parent/s.

Whilst the number of huacaya from suri is too small for anyone to jump to conclusions about improvement in quality, our experience parallels that of other breeders (see Cherie Bridges, 'The Enigmatic Suri', *Alpacas Australia,* Issue 12). The most common improvements have been a reduction of medulation, silkier handle and greater density. Regarding the latter, a report on Dr. Jane Wheeler's findings that suris possess a higher follicular density can be found in Tuckwell's *The Peruvian Alpaca Industry,* No. 94/8. The downside is that these progeny often display a broader style of crimp than is common in a huacaya, but the handle is certainly to *die for!* Apart from being highly suitable for crossing back to suris, several Australian breeders believe that using these 'huacaya' in their huacaya breeding programs will improve the quality of the huacaya fleece and help develop a single-coated alpaca.

Cameron Holt at the former Melbourne Institute of Textiles (now RMIT University) is impressed by the handle of these huacaya (showing huacaya fleece characteristics) produced from two suris. For those concerned as to how these fleeces would be classed, Holt was told by processors in Peru that these are graded into the huacaya line.

He also believed the suri-type fibre that exhibited good lustre, solidity of lock and a crimp-like wave was an intermediate fibre type (Holt calls it a 'huasu') and, in his opinion, this type would probably be best mated back to the suri. In Peru, this fibre type is graded into the suri line.

Unravelling the mystery of the chili

The samples I'd taken along for my talk at the Suri Information Day confounded many suri breeders, including me. There were samples of suri-like fleece out of so-called huacaya and indeterminate fleeces showing lustre and staple length but no lock architecture, etc. On a scale of 1-100 (huacaya to suri) some of them would have been classed as somewhere around the median although still identifiable as suri or huacaya.

The best of the suri-like fleeces out of huacaya x huacaya parents were declared unanimously by the leading suri breed-

ers and judges to be suri. When enlightened as to the parentage, they were as surprised as I had been. This flew in the face of everything we understood about the dominant gene theory. I re-read both Carrick's and Ponzoni's papers to try to understand about possible variations.

I considered first the haplotype theory. While, according to Carrick, a haplotype might behave like a genetic unit and seem like a single gene locus, in time, and in isolated breeding populations, it can segregate and produce results different to the single dominant gene.

Carrick's 'partial dominance' suggestion could also explain why the chili type exists and why so many registered 'huacaya' are producing suri-like cria. (The chili type typically has a stringy forelock, soft, lustrous fleece and little or no crimp.)

I telephoned Dr. Carrick and Dr. Ponzoni to discuss the anomalies I'd seen. *Both stressed that their work had only 'skimmed the surface' and that a lot more research was required!*

During my conversation with Ponzoni, he confirmed that the single dominant gene acted as an overrider, rather than controlling specific suri fleece characteristics. He talked about several possibilities for variation which could account for the unusual samples I'd collected. One, of course, was the problem that can occur with a haplotype when the block of genes gets broken up, with varying results, as mentioned above.

He also said we needed to consider the possibility of a third allele and 'partial dominance' or an 'incomplete penetrant'. In this case, progeny will express the suri-type although it is not exhibited in the parents.

Carrick also explored these possibilities in his paper:

> 'The Chilenos may be right to classify three phenotypes because the S and h (we are most likely used to 's') genotypes could be only partially dominant. If this is true and there is variation in the phenotypic expression of the Sh (or Ss) genotype (or parental imprinting), then a small proportion of Sh (or Ss) phenotypes may sometimes be classified as phenotypically huacaya and this could explain a very small proportion of suri types in the huacaya breed.'

Suris masquerading as huacaya

The above explanations have helped shed a great deal of light on the mystery of so-called 'huacaya' throwing 'suri'. But what if these or one of the parents were chilis? It was the last bit of digging I did which finally swept away most of the remaining confusion I had about anomalies in our data base.

As I said, the problem so many people have had with the single dominant gene theory is that they've expected suris and huacayas to fall into two distinct fleece types – but they don't. Remember that whilst an alpaca may inherit the suri fleece type, unless the suri parent expresses and passes on the desired suri polygenetic traits of lock architecture and lustre, the resultant suri offspring may end up chalky and flat-locked. It may not look like a real suri and, in the early days in Australia before anyone of us had seen a suri, it could have been mistaken for a huacaya.

When I traced the history of the animals whose samples I'd collected, I found them or their parents to be either part of a shipment of suris from Chile or part of a shipment of huacaya from Chile. So, how did they come to be classified as 'huacaya' when some looked decidedly more 'suri'?

The Chilean Government's suri 'sell-off' policy

From a very reliable source in the U.S.A., I learned that the policy of the Chilean Government in the early days was to sell off all their suri or suri crosses. As a result, all importers were forced to take a percentage of suri bloodlines as part and parcel of the contract.

According to my source, the first shipment of suris to Australia from Chile included huacaya out of suris and 'intermediates' or 'chilis'. The same with the huacaya shipments. I doubt that anyone purchasing these animals in Australia knew their genetic history or the policy of the Chilean Government but it was common knowledge in the U.S.A. This was where I first heard the term, 'chili-type'. Although there was a quantity of suris sold as 'suris' which obviously looked like suris, most of us didn't have a clue what a suri looked like. The poorer quality suris (or chilis) and huacaya out of suris would have been sold as huacaya. Whilst suris were unknown, there were queues of buyers lined up to buy huacayas and we considered ourselves lucky to get one, regardless of whether its fleece looked stringy and straight. Interestingly, the 'chilis' and 'huacayas' in the suri shipment from Chile were all mated to the one suri stud sire (average quality by today's standards). Some of the suri progeny were far superior to a normal first cross-type from an average suri sire out of an average huacaya dam, which is not surprising given the genetic background of some of their dams.

The Register's program: 'huacaya' default function

Originally, all alpacas on the register were simple referred to as 'alpaca'.

The designation of 'huacaya' or 'suri' in the classification was introduced only after the first shipment of suri arrived in Australia. ABRI made changes to the program on the data base but the problem was that all classifications defaulted to 'huacaya'. Owners were warned in the AAA *Newsletter* that *their alpacas would be classed as 'huacaya' unless they sent in a statutory declaration plus photos to have their alpaca designated as 'suri'.* But did the message get out?

According to ABRI, diligent owners who'd read the newsletter complied, but a lot didn't bother, particularly if the animal had already changed hands. So those alpacas which were not re-registered as 'suri' remained with the incorrect 'huacaya' classification.

Some of these fleeces and photos I've received, particularly of progeny, show classifications are clearly incorrect. An old suri breeding female can look much like her huacaya cousin – chalky and coarse – but the straight, lustrous fleeced progeny tell the real story. It's hard to decide on a real definition of a suri. If we agree it is absence of crimp plus other polygenetic traits such as lustre, do we then declare them 'huacaya' if their fleece tends to fluff out a little? How would the huacaya breeders feel about that?

This ABRI program default is causing *many* headaches. I have discovered several suris which have been registered as huacaya or as having two huacaya parents! One example I found was a 'huacaya' stud male sired by a well-known homozygous suri! When I rang the owner, she was horrified to find that her suri male was listed in the database as 'huacaya'. Many breeders are using old registration forms which do not have the box to designate suri so every cria they register is classified as huacaya! I have raised this problem with the Registration Chairperson and it will be dealt with.

Are we sitting on a treasure trove of coloured suri genetics?

I'll leave that for you to decide. You'll know if you have a possible gem. Right now, she is probably stuck away in the back paddock. She may have a stringy forelock, or open, straight. lustrous fleece and produce similar offspring. These alpacas could either be chilis, poor quality (or plain old) suris, first-cross-type suris or even huacayas which, genetically, are actually heterozygous suris (examples of partial dominance). Many of our Chileans possess the vital suri polygenetic traits. These traits have been watered down in the suri herd after thousands of years of inbreeding with huacaya. That's why you'll find some suris, even from several generations of suri, with chalky, flat fleece. Visitors to my farm have left with a different opinion of first cross-type offspring produced from superior quality sires (and good quality huacaya dams) after comparing them with some of the lesser quality, naively-labelled 'pure' suris from two mediocre suri parents or even a good sire and poor quality suri dam.

For rare colours like black and grey, it may take several generations before we produce enough homozygous sires which are also dominant in desirable polygenetic suri fleece 'traits'.

Be careful! Selecting from a long line of suri on both sides does not necessarily provide a short cut. Second-cross-type offspring from a *homozygous* sire have a 50% chance of being homozygous compared to only 25% from a long line of suris if both parents are heterozygous. That's why the notion of a *third*-cross-type being automatically superior to a *second*-cross-type is flawed. Homozygosity has not been taken into account in the overall equation. Proving homozygosity, in turn, is difficult. A sire is easy because we can breed him to a large number of huacaya females. But, how do we class a female? We're not likely to breed her to at least ten huacaya males just to prove she is homozygous. Likewise, be wary of comparing the crossing of suri and huacaya with other livestock such as the crossing of Merino and Border Leicester sheep or Cashmere and Angora (Cashgora). We are not crossing two different breeds but two different fleece types. Would we compare the crossing of a smooth and rough-haired Collie to a Collie and a Bulldog?

Where to from here?

More research on suri genetics is vital if we are to develop a first-class alpaca industry in Australia. For all we know, some breeders may be correct in their belief that cross-type breeding may be necessary to retain, say, lustre, in the huacaya herd. Fortunately, as suris and huacayas have remained on the one data base, we have the opportunity to develop it as a tool to supply information and data from which we can better understand the genetics and biology of this species.

The future of the suri in Australia

Dr. Ponzoni sees the suri as unique in that it is one of the few livestock breeds that offer Australia a viable long-term future. More inspiration comes from Roger Haldane, whose current project is to breed a herd of coloured suri from his coloured huacaya. Talking to him recently, I found his enthusiasm for the coloured suri gave my spirits a real lift. He even talked of making an appearance again at our major shows with some of his superb first-cross-types. 'My dream', he said, 'is to have a paddock of golden suris'. Perhaps we'll see some at next year's National!

So, what makes the suri so viable?

Think about this: less than one per cent of the world alpaca herd is suri. We don't have a huge, competing producer in South America as we do with huacaya. There are reports that suri numbers are diminishing in the Altiplano due to environmental factors. By contrast, the suri thrives in Australia's climate and suffers little (if at all) with heat stress. Reputed to have a more efficient conversion system than even the huacaya by authorities such as Escobar (and backed up by our and other breeders' experience), it also thrives on marginal land and requires less expensive hand feeding. (We have 'Jenny Craig' paddocks for our suris who easily run to fat if given the same rations as our huacaya.) The fleece sells for up

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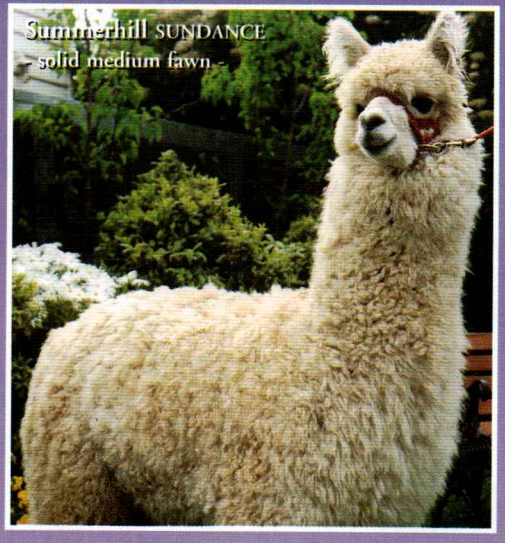
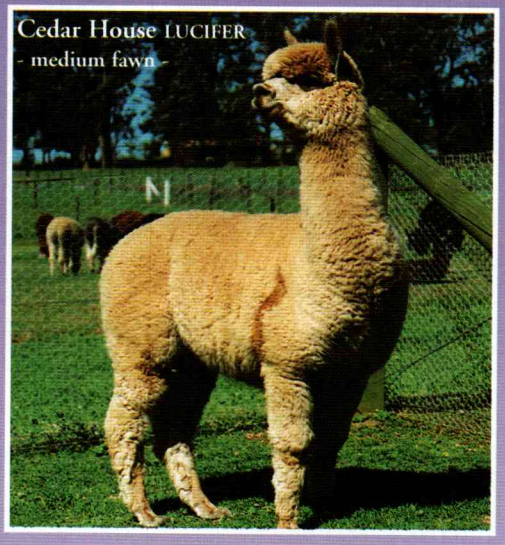
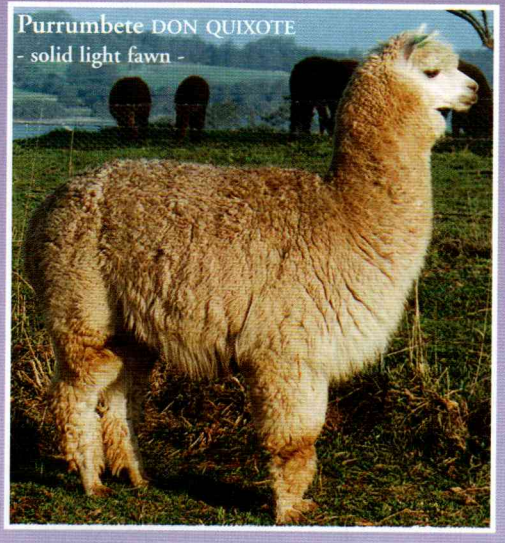


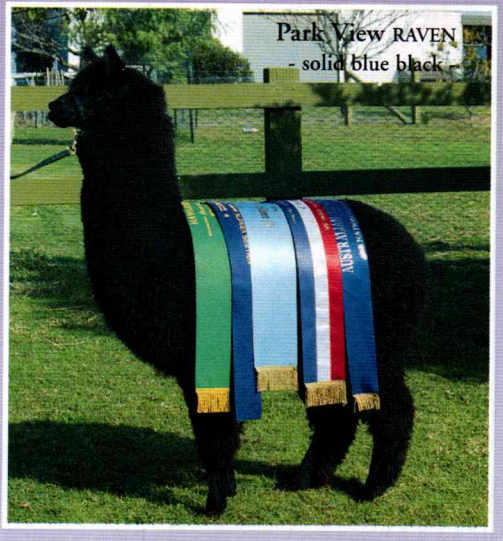
SUNDANCE, a beautiful upstanding young male by Purrumbete El Dorado & out of Purrumbete Flamingo Sunrise (Purrumbete Showpiece). This boy oozes style, density, coverage, crimp & a lovely soft fine fleece. We are confident Sundance will add some outstanding genetics and stunning cria to any herd.



LUCIFER (son of the famous Purrumbete Highlander) has stunning apricot fleece with beautiful character, density & lustre. Some show results – Supreme Alpaca Picton '97, Champion Fleece Castle Hill '97 & Hawkesbury '97, Champion Adult Fleece Sydney Royal '97, Res. Champion Adult Fleece Sydney Royal '98, Champion & Res. Champion Adult Fleece Hawkesbury Spring Show '98.



The legendary DON QUIXOTE needs little introduction. His outstanding fleece qualities can still be seen in his offspring, proving that at a regal 14 years of age he continues to impress.



RAVEN still retains the beautiful soft, lustrous, crimpy & dense fleece which has brought him numerous blue and Championship ribbons at shows up to National levels. His cria exhibit superb conformation and soft handling lustrous fleece of great character.

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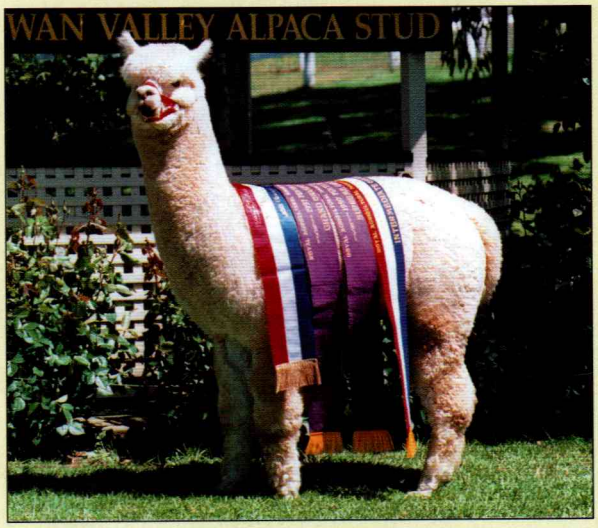
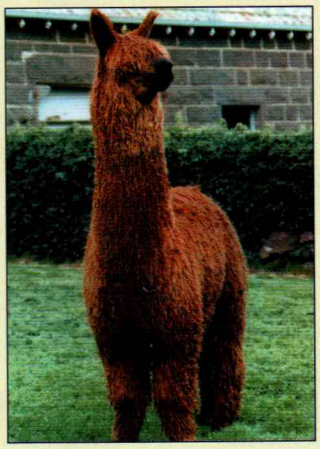


Shanbrooke Elite
His record speaks for itself. Winner of 7 championships T/O Aust. Incl. National Classic
3 Supreme Championships in WA. Res. Champion Fleece National Classic 1997 & 1998

Swan Valley Majestic
Supreme Champion 1998 Perth Royal Show
& Albany Show. Outstanding genetics.
Sire: Peruvian Sonoma
Dam: Purrumbete Portia



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to three times the price of huacaya in South America and the lack of medulation means double the quantity as virtually the entire fleece goes into the 1sts bag.

So, we have much cause to rejoice in the bonus of our 'suris in disguise' amongst the old Chileans, especially their magnificent colours. Let me give some of you jaded Chilean owners some more inspiration.

Unlike the market for huacaya fibre (which demands a high percentage of white) the suri market, with its limited supply, demands a much higher percentage of natural colour. To explain: suri is not used in a wide range of end products because of its rarity. Almost all goes into high fashion ladies coating for which producers cannot meet the demand. Suri coats sell in Japan and the U.S.A. from $A3,000-5,000. The haute couture boutiques selling these luxury garments label them as 'green fur' (all the luxury of fur but from an animal that lost its fleece, not its skin). As with fur, natural colour is preferred. Natural colour also avoids the need for harsh chemicals and has a superior handle (see Stephanie Pope's interview with Beatriz Canedo de Patiño, next issue *Suri Club Newsletter*). Luxurious suri coats are proving very popular with the more environmentally-conscious of the social set. (Hilary Clinton has staged several parades featuring Beatriz Patiño's suri garments and both the Clintons are regular clients of Patiño.)

Designers and manufacturers such as Beatriz Patiño and Maria Bravo declare suri the most luxurious of all fibres because of the silky handle and natural sheen and both were enthusiastic about the possibility of natural colour. In fact, Maria has her own herd of around 100 coloured suri.

Feedback from reliable sources confirms that breeders in Peru and Bolivia are crossbreeding suris with coloured huacaya to cash in on the growing demand and high prices paid for coloured suri. But where are the best coloured huacaya genetics? Australia! At least, as far as our blacks, greys and browns are concerned. I'm not suggesting we should stop producing white suris but I am proposing that we consider another alternative for the devalued coloured huacayas overshadowed by the white Peruvian imports. There will always be a market for white suri. But keeping our eye on the ball means breeding for the end market of luxury coating in all the naturally vibrant colours we can offer. Even in huacayas, natural colour is gaining currency, according to Japanese textile chief, Toshiaki Ogura, Managing Director of Nagawa Co. Ltd. a speaker at the Adelaide National conference in July.

With our superior coloured genetics, we have the jump on the rest of the world with the opportunity to produce the best coloured suri herd. 'But won't it take decades to breed up the numbers?' is a question I'm often asked. How many coloured huacaya dams are there in Australia and how many owners are looking for a new and exciting alternative? If only 20% of huacaya owners put a suri over their coloured huacaya just once, we'd add several 1,000 coloured suris to our national herd. (There are only 60,000 suris in South America and their numbers are diminishing.) The cost of conversion? As a suggestion, why not try syndicating stud sires on a time share basis? A quality suri sire would cost $3,000 to $5,000 between, say, six of you for two months' unlimited use on your farm. Next year, sell your time share or exchange your sire for another! We could develop the world's biggest and finest coloured suri herd in the world within a matter of years.

So, where do we go from here? I know of a few astute breeders who have been picking up coloured chilies at bargain prices to start their own coloured suri herd. They're off to a good start. I'd like to add, at this point, that I'm not overlooking Peruvians or top quality stock in general. The good quality Peruvians bred to suris on our farm are producing superb suris because of their fineness and density. This year, I'll be putting several of my champion huacaya dams to my coloured suri sire, based on the results so far. Likewise, I'm not overlooking the use of white huacaya to breed more white suris, but white suris are less expensive and easier to obtain from overseas than coloureds.

We really have no idea how many Chileans we have with untapped valuable suri genetics. The number of fleece samples I've tracked down from breeders around Australia is small and a lot more are needed, preferably from whole families. Dr. Ponzoni believes these would provide excellent material for a research project. Both Dr. Ponzoni and Dr. Carrick have indicated a strong interest in continuing the research and, clearly, the exciting results we are getting in Australia definitely warrant our support.

If you have a huacaya which you think exhibits suri traits or throws suri-like cria and would like to help us all learn more about this fascinating sub-species of the alpaca breed, please send me fleece samples, photos and general breeding history. If you'd like to see examples of some of the colours we've produced at our farm, I'd be glad to send photos or videos or recommend contact names of breeders in your area who have implemented successful cross-type breeding programs.

Whether you choose to be part of the development of Australia's coloured suri herd or not, I urge everyone to keep their minds and options open. The decisions we make as breeders should be respected. For those of us who see a glint of gold in some of our old Chilean girls, I'd like to end by asking 'what have we got to lose?'

Samples can be sent to: Sandi Keane, Pinjarra Alpacas, RMB 16244, Mansfield Road, Lima South, 3673, via Benalla, Victoria or telephone 03 5768 2549.

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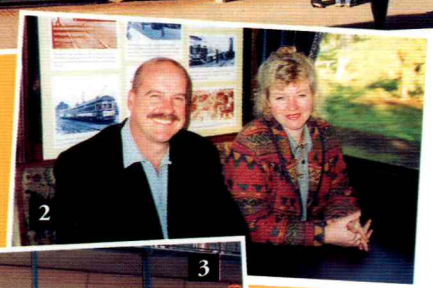
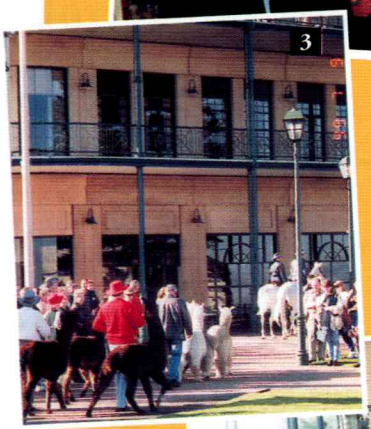
The National

By Kate Graham





Pictures
1. *The 'Grand Lady'.*
2. *Chris Williams and Adrienne Clarke, sponsors.*
3. *The Alpaca Parade down Jetty Road, led by mounted police.*
4. *Arriving at the Stamford Grand Hotel.*

Beginning with a touch of magic and ending with creative flair, this year's National Conference , 'Alpaca – Born to be Worn', held in Adelaide on July 9, 10 & 11, brought together more than 230 alpaca enthusiasts in a relaxed and friendly atmosphere for an informative and well-organised weekend.

I felt I had a vested interest in this event, having come up with the Conference title at the breakfast table, one morning late last year. So it was a bonus to be there amongst the speakers and delegates in the Stamford Grand Hotel at Glenelg, taking photographs and following the proceedings on behalf of Alpacas Australia.

After a dismal Thursday, Adelaide turned on perfect weather for Friday morning's Buffet tram ride from the city in the elegantly appointed 'Grand Lady'. Guests relaxed and enjoyed champagne and sandwiches during the leisurely journey to Glenelg, arriving at the Bay in time for the colourful parade of alpacas down Jetty Road, led by two mounted police greys.

After the Official Opening by SA Deputy Premier and Minister for Primary Industries, Natural Resources and Regional Development, Hon Rob Kerin, AAA President Ian Watt invited the dignitaries to tour the trade displays and meet some of the alpacas penned on the lawns in front of the marquee. Here members of the public could also visit, access industry information, buy alpaca products and get acquainted with alpacas first hand, and a steady stream of visitors did just that throughout the weekend. An indoor trades area on the first floor, adjacent to the lecture rooms, was also available to delegates.

Plenty was already happening at this conference, including the official launch on Friday, during lunch, of the long-awaited new video, financed by ten alpaca studs and directed by Benoit Ernst. (More, page 27.)

Motivational speaker and magician, Peter Salerno, got the sessions off to a lively start, co-opting assistants from the audience as he performed magic tricks to drive home some pertinent points. I would have stayed for the entertainment, but Japanese fibre processor and President of the International Alpaca Association, Mr Toshiaki (Aki) Ogura was waiting to be interviewed, and this was an opportunity not to be missed. Mr Ogura is Managing Director of Nagawa Co. Ltd, a major Japanese company trading in natural specialty fibres, yarns, fabrics and garments. Already familiar with his notes, I knew he

Conference '99

had some fascinating technological developments from Japan to report during the conference.

Aki proved to be a gracious gentleman, who patiently explained the basics of a new processing technique which blends a water-soluble synthetic fibre, Kuralon K-II, with natural fibre in the spinning process, to produce a vastly finer thread.

Mr Ogura was one of sixteen speakers invited to present a diverse range of material over the weekend. Most sessions were offered at least twice in a well structured program that allowed ample time between sessions for catching up with friends over a coffee and snack.

If anyone left this conference without learning something new and interesting it could only be because they dozed off in the warm rooms. Christine Navarre's presentations on 'Basic Nutrition and Nutritional Diseases', and 'Basic Care and Health of the Alpaca', gave us much food for thought. Aki Ogura ('A Processor's Perspective on Alpaca Fibre') brought a focus on the world market for fibre and the cyclic fashion trends which result in periodic booms for natural fibres like alpaca, cashmere, and mohair. Ian Knox, that entertaining educator on all things fleecy, again tested our assessing skills with his varied collection of samples, and the results showed that we're improving our classing ability. Top scorers in each session won a pair of Co-op alpaca socks.

Dr Geoff Judson ('Vitamin D status of alpacas in Southern Australia'), Dr Ian Carmichael ('Diagnosis and control of parasites of alpacas in winter rainfall areas of Australia'), Dr Raul Ponzoni ('Genetic considerations in alpaca improvement programs') and Bruce McGregor ('The influence of nutrition, management and climate on the quality and production of alpaca fibre') used the results of scientific research to offer breeders practical advice.

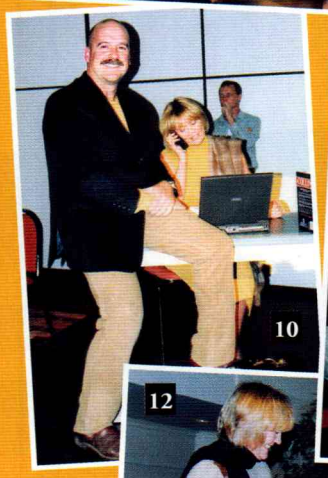
The nutritional aspects of McGregor's and Navarre's sessions were complemented by Phil Barnett's informative discussion on the role of soil analysis in animal nutrition ('Balanced Soils for Optimum Production').

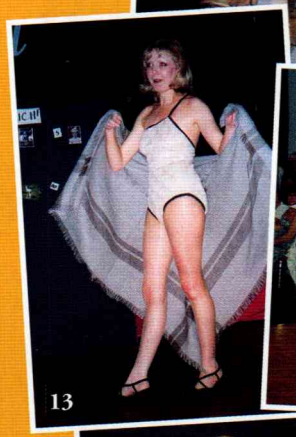
Dr Ewen McMillan's absorbing illustrated lessons on 'Female Reproduction' and 'Male Reproduction' provided insight and a sound basis for understanding the fascinating material presented by Dr Jane Vaughan and Prof David Galloway (filling in for Prof Michael D'Occhio): 'The role of reproductive technologies in genetic improvement and multiplication of alpaca'. Chris Tuckwell offered worthwhile 'Considerations for designing a breeding program', while Andrew Leunig ('Practical Business Planning') and Jeremy Duffy ('Business Structures – Options and Legal Issues') challenged our attitudes to business planning and management for future success.

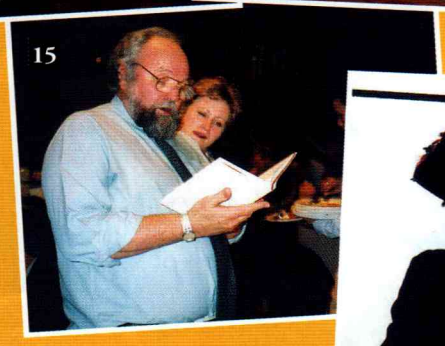
A team of South Australian vets presented the invaluable neonatal workshops. After receiving an instructive overview of the birthing process, participants donned surgical gloves for practical experience in identifying both normal and abnormal delivery presentations. Young SA farmer, Aaron Freeman, commented afterwards, 'It was good. I was surprised that some people held back from feeling the crias, because I'm used to just going in and ripping out a lamb to save the ewe. But it's a lot different with alpacas, and I really learnt a lot from this.'

Pictures

5. *Alpacas and marquee attracted many visitors.*
6. *Carolyn Jinks and her 'assistants' in the marquee.*
7. *'Let me introduce you to the world's finest livestock!' Ian Watt with SA dignitaries, the Hon. Rob Kerin (left) and the Hon John Oswald.*
8. *The happy vets! From left: Jim Smith, David Galloway, Jane Vaughan, Ewen McMillan and Adele Feakes (front)*







The cocktail party on Friday evening was a good opportunity to relax and catch up with other breeders. It was also another launch opportunity, this time for AAA's new web-site. Stephanie Pope, chairperson of the electronic media subcommittee, and Malcolm Urquhart representing service provider, Ag On Line, introduced the site with a large screen preview of the initial draft, promising a more user-friendly and comprehensive resource for both AAA members and those interested in the industry.

Saturday brought another first: two hours set aside for interested members of the public to obtain basic information, instruction and advice. Five or six prospective buyers, along with a smattering of breeders, attended the friendly, informal sessions on animal handling and basic care. These were conducted on Saturday and Sunday afternoons by Carolyn Jinks, assisted by three competent young handlers and their alpaca friends.

Carolyn was very positive about the value of such sessions, both for the AAA and the public. 'Even if we only reach one person who is seriously interested in the industry, it's worthwhile,' she said. 'What's more, they show that we're prepared to make ourselves available to educate and inform the public about alpacas – just as much to small as to big audiences. Not about promoting any one breeder; these meetings give people who are seriously considering alpacas a chance to be informed about the animals and the industry, and they learn what questions to ask as they look around before committing to a purchase.' (The new video was put to good use at the end of each session.)

During afternoon break, Chequers, one of the PR alpacas, was co-opted to demonstrate the functions of The Alpaca Groomers' new shearing table. I'm not sure that he was impressed by the distinction of being the very first alpaca to be stretched out on this equipment, but he quickly aroused interest among onlookers in the practicalities of the table.

Pictures
9. Alpaca fashion evening wear. 10. The 'corporate alpaca' scene, fashion parade. 11. Doesn't alpaca make a great shawl!
12. Dee Finlay and Mark Short, getting that country feeling. 13. Swimwear with alpaca flair.
14. Saturday night MC, Chris Williams. 15. Ian Watt and Jill Short 'in pursuit of answers' to the Saturday night quiz.
16. Jane Wray (Hahndorf Hills Alpacas), successful Auction bidder for an Adela Haus original felted hat.
17. Off on the Barossa Valley post-conference tour: (from left) Jenny Jones, Keith and Jeanette Hollingworth, Carolyn and Allan Jinks, Carol Quin and Sandra Wright.

The hotel management had been very accommodating about having live alpacas in the building (as well as dead crias), so our guarantee that they would be perfectly behaved had Rosemary Horden running behind one of her animals with newspaper in an effort to protect the carpet during one of the public sessions – a photo opportunity I was sorry I missed, but which must have been hilariously memorable for the visitors.

Memorable too was the Conference Dinner on Saturday night. Two hundred and twenty delegates and friends enjoyed fine food and wine, music, dancing and action-packed entertainment with master of ceremonies, Chris Williams. The evening's fun included a quiz and competition to guess the identity of some well known faces from baby photos, raffles, and a spirited auction of generously donated goods which raised several thousand dollars. Ingenuity abounded in the pursuit of answers during the evening, with the use of mobile phones, quick referrals to publications on the merchandise stand, visits outside to the national display board, the buying and selling of clues and attempted bribery. Guests partied well into the small hours as the band played on, but MC Chris still looked bright eyed and bushy-tailed next morning – wish I knew his secret.

The best-kept secret of the weekend was the details of Sunday afternoon's fashion parade Finale, which had been put in the capable hands of Adrienne Clarke. Adrienne wanted to make the event fun and a bit different. Using music to suit the various styles of garments, and introducing each segment in 'Born to be Worn' verse, she presented a selection of alpaca wear appropriate for almost every situation and activity imaginable, from the moment of waking (who will forget those bodies in bed on stage, emerging from under the doona?) until late at night. Spotlit cameo scenes set up on the main floor allowed us to see the garments modelled in the context: on the farm, in the office, as casual daywear, and as formal evening wear.

The conference wound up with well earned praise from Ian Watt and acknowledgment of the hours of effort put in by Lea Richens and her SA team, Coordinator Rhonda Perpoli and AAA National Committee and the hard-working Jenny Jones and office staff.

Besides their souvenir satchels and T-shirts, delegates surely took home a wealth of information and some memorable images from the weekend: the tranquil seascape, once the morning mist lifted; alpacas in the lift and looking quite at home in the Ballroom; Michael D'Occhio's wonderful photo from New Zealand of a row of ten cloned calves; David Galloway's fascinating set of slides, unique in the world, showing sperm production in alpaca testicular tissue and his funny shadow-play demonstration of how to measure a standing alpaca's testicles; and Lea Richens climbing into bed on stage to mark the end of her official duties. I can tell you it was a great weekend, so if you weren't there, plan for August next year in Canberra.

MORE CONFERENCE COVERAGE NEXT ISSUE

KATE GRAHAM interviews Conference speakers Aki Ogura, Christine Navarre and Jane Vaughan

Enchantress weaves a spell

Due to editorial error (or supernatural intervention), we captioned two photographs incorrectly in 'Playing by the rules' (issue 27).

The alpaca captioned as 'Ladysmith Enchantress' (pp 35 and 36) is actually *Shanbrooke* Enchantress, purchased at four months from Ron and Dianne Condon by Jennie and Philip Cohalan.

What's more, she didn't win Supreme Champion at the Picton show, The Pines Queen of Sheba carried off this ribbon.

However, Shanbrooke Enchantress did win Supreme Champion Alpaca at Kangaroo Valley and Camden in 1998.

We hope this sets the record straight.

Conference coverage

Many thanks to our reporter for this year's industry conference: Kate Graham (Kalbarri Alpacas). She has produced a most comprehensive overview of 'Alpaca – Born to be Worn'. Readers will find her interviews with Aki Ogura, Christine Navarre and Jane Vaughan absorbing reading in December.

We are also extremely grateful to Kate for her major contribution of Conference photographs, and to Julie Sparks (Scintilla) and Neil and Dianne Daniell (Barachel Alpacas) who also supplied us with some excellent shots.

If you missed the Conference, don't miss out on the smart, new, perfect bound format Proceedings (see order form, page 56).

PUREBLOOD

PART 4

by Mike Safley

ALPACA SHOWS, BREEDING OBJECTIVES AND BREED STANDARDS

Alpacas are one of North America's newest livestock breeds. There were few, if any, alpacas in the U.S. when Ronald Reagan first became president. When compared to the voluminous information available about sheep and cattle, a review of the world's alpaca literature reveals little about the alpaca's fleece and almost nothing about the alpaca itself. For instance, there are no breed standards published in South America, where 98% of the alpacas reside, and few, if any, books which address the breeding of superior alpacas.

For the past fifteen years, U.S. citizens, Canadians and, more recently, Australians have raised alpacas. To date, no breed standards have been developed in North America and breeders have not even agreed on what constitutes an ideal alpaca type. The show ring is gaining more prominence, but even the show rules are ambiguous in their definition of a superior alpaca.

For the most part, the North American alpacas' standard of quality has been determined by: (a) imports and, therefore, the importers, and (b) the ranches with the biggest advertising budgets and, therefore, the big breeders' alpacas. This is not necessarily a bad thing, it is just how the industry has developed. I know, because I have participated in the process for better or worse.

It is time for alpaca breeders to collectively think about such issues as breed type, breed standards, breeding objectives, the show ring, and what really constitutes an elite alpaca. Breeders need to strive for an ideal alpaca that strikes a balance between form and function. We need to understand the influence of the show ring, breed type, an alpaca's cash value characteristics and breed standards. In the past, the show ring and alpaca breed standards have been a controversial subject.

THE HISTORY OF LIVESTOCK SHOWS

Livestock shows began at local markets, which were similar to today's state and county fairs. The original purpose of the fairs was to provide a place for the buying and selling of livestock. In the Andean altiplano, a person who has a few animals for sale still takes them to a weekly fair or market. If no buyer makes an acceptable offer, he/she takes them home and waits for the next fair. It was a small step from displaying animals for sale to having their merits appraised by judges. Beginning in 1801, Charles Colling, a famous shorthorn breeder, toured the U.S. for more than six years with his 'Durham Ox'. He was one of the originators of livestock shows, although his tour was more like a sideshow than the show rings of today.

The first European public exhibitions corresponding to our modern livestock shows were held in Sussex, England in 1798, Denmark in 1810, and Germany in 1817. Most of this early showing was for advertising purposes, and the premiums offered were small or nonexistent.

The history of breed standards and show rules in North America

I was co-chairman of the show committee in 1990, when the original alpaca show rules were adopted. Before we wrote the rules, we surveyed AOBA's members for their opinions about breed standards and what show system the industry should adopt. The following excerpt from the original show committee report (1989) reflected the AOBA membership's thinking on the subject of breed standards and their place in the show ring.

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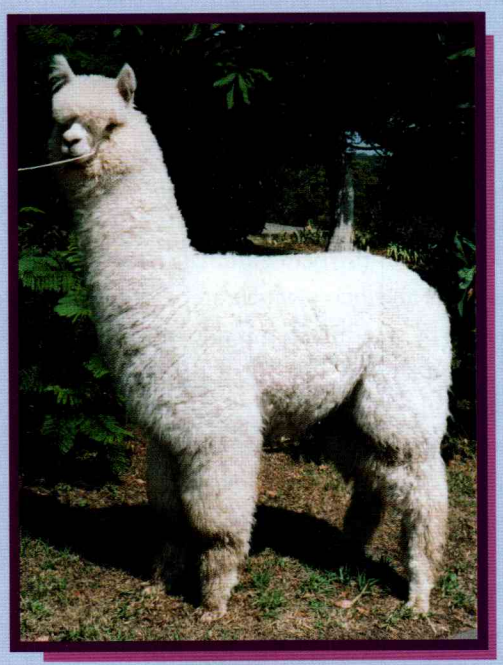

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'Breed Standards...

'This topic is easily the most controversial addressed by the committee. There seem to be two basic schools of thought. One group believes that the standards should be established with specificity and in detail. The other group feels that initially at least, actual standards should be minimal...

'With specific standards we would set ideal height, wool specifications weight and conformation qualities. Each of the qualities would be assigned scores and values. The animals would be judged accordingly...

'The minimal standard group would generally include all type alpacas. Each animal would be evaluated in a manner which penalized negative traits; i.e., knock knees, sickle hock, cow hock, banana ears, etc. The positive traits would remain more subjective on the judge's part...

'For instance, wool would be considered important in each approach; with *specific standards*, fineness, softness, density, consistency would all be assigned particular value and quantified. Wool might further be considered 50% of the score. With the *minimal standard* approach, wool would be considered very important and the animal would lose points if there was excessive guard hair or noticeably poor coverage...

'More than one member has suggested a go slow approach to breed standards. The middle ground may be a periodic review of standards or the addition of more rigid standards as experience dictated...

'One thing is clear, this issue will get plenty of debate. Hopefully a consensus will develop.'

'Issues that provoked most written comment from survey participants were as follows:

'Breed standards. While 58% of the respondents favored breed standards, the comments made it clear that these standards should be general and not meant to exclude marginal animals that were clearly alpacas.

'*Judging Criteria.* People are interested in protecting the gene pool by excluding animals who had clear faults but they were also interested in crediting animals for good wool and conformation.

'Wool Quality. The responses generally favored placing an importance on wool quality but rejected the concept of wool quality as being *primary.* Many people suggested that wool should be 40 to 50% of the total consideration.'

That same report, which was adopted by the AOBA BOD, had some interesting comments on the subject of awarding championships in alpaca shows.

'The show format has some unique and creative aspects. Alpacas will be judged in classes formed according to nine color categories. This approach will ensure multiple champions, thereby diversifying quality bloodlines throughout the North American herd. With many classes, breeders will have a maximum of opportunity to promote champions, alpacas will be promoted and displayed according to their most unique qualities; color and fleece.'

The concept of color championships was never put into practice and today alpacas are the only livestock whose shows, according to the current Alpaca Llamas Show Association (ALSA) rules, as a practical matter, do not allow championships. This has been the tradition enforced by ALSA alpaca show rules for the past nine or ten years. More recently (since 1998), many regional shows and the National All American Alpaca Futurity have decided not to have ALSA sanction their shows and have incorporated AOBA's original idea of color championships into their show formats. For a show format to have a positive impact on the improvement of any breed, it must award excellence and recognize outstanding merit.

THE POTENTIAL BENEFITS OF THE SHOW RING

Shows are primarily a promotional vehicle. They allow an industry to promote its breed and breeders an opportunity to promote their ranch and stock. It is a fact, right or wrong, that alpacas with blue ribbons and championships sell for more than ones standing at the tail end of their class. Winners are advertised and their sires are promoted, often commanding high service fees and a waiting line at the breeding paddock.

For breeders, shows are an excellent place to meet with other breeders and exchange ideas. The show ring provides an opportunity to learn about the better animals and to keep up to date on the alpacas and herds which are winning. A purchaser can learn a lot by standing at ringside. It is fun to place the class before the judge does and then try to see why the judge's placing was different from yours.

There are two ways by which the show ring can help breeders develop better alpacas. First, it can help keep breeders informed about the ideals of the breed. If breeders follow the judges' preference in their selection of stock, and the judges are well qualified, the show ring can be an important factor in guiding the breed's development.

Second, the show ring might become effective in identifying the best animals, allowing breeders to accept show ring placings as guides to their breeding decisions. This might also have some mild effect on the genetic composition of the breed if repeated year after year, since it would encourage a slow grading-up process in the direction of the prize winners. This form of selection would favor the phenotypes most frequently favored by the judges and their approval or disap-

proval might help determine which animals become paternal grandsires or great grandsires of the breed.

The negative effects of shows

Ideally, the show ring would identify alpacas according to their breeding value, but the judging process is not very effective in this regard because:

a. the correlation between outward appearance and real productiveness is low for many characteristics;
b. such a small percentage of all purebred animals are shown;
c. considerable attention is paid to grooming, temporary conditions, and showmanship; and
d. many important things which the breeder may know, such as amount of milk and fat produced by dairy cattle, number of pigs weaned by sows, length of fleece on sheep, etc., is information which is not available to a judge.

Anyone reading books about animal breeding, written by geneticists, will immediately notice that they take a dim view of shows that are based on appearance. The following quote from *Animal Breeding* by Dr. A.L. Hagedoorn, expresses a common opinion held by geneticists about livestock shows and their negative role in the selection of animals for breeding programs:

> 'Although as a geneticist I deplore the fact that in the selection of good, profitable animals the show yard ideals have made things unnecessarily difficult, I recognize that breeding animals for the shows is not only a hobby, but a paying industry for those who understand it and who make a success of it. This is especially true when the animals have some economic value. There is certainly more money in breeding draught-horses or sheep or pigs for the shows than there is in raising those animals for the ordinary market.
>
> 'Breeding animals for the shows is a very peculiar business, because of the fact that it is wholly competitive. Whereas the breeder of utility sheep or utility pigs produces something that has a certain market value, which is not changed very much even if ten of his neighbors start in with him to raise the same sort of sheep or hogs, breeding animals for the shows can only pay the man who succeeds in producing such stock as is pronounced by the judges of the moment to be the most beautiful and the most fashionable.'

To many geneticists, the evolution of a show breed is interesting. They often see the process as follows. A certain type of head becomes the fashion for a particular breed. To improve on this new head type somebody makes an outcross to another closely related breed, and as a result they produce, in two or three generations, animals that consistently win. But, as a result of the cross, those prize winning animals have hair of a different type. When the judges first begin to see this type of hair, it is considered a small fault; next, it is okay; and finally the new hair type becomes a desirable quality. So the process

goes, until the breed is completely changed. There are many examples of dog breeds which have been entirely altered, to their detriment, by the vagaries of the show ring.

Show preparation can often be more important to an exhibitor's success than conformation or fleece quality. The fashionable winners in some breeds owe their success almost as much to the art of the trimmer as to their ability as a breeder. These grooming practices may prevent a judge from ranking the animals in the order of their breeding merit. For example, staple length is especially important in the Merino and Rambouillet breeds. Yet the length of fleece which the sheep wears when it enters the show ring may be so altered by shearing, blocking, and trimming that the judge cannot afford to pay much attention to staple length. In other words, the temporary condition of the animal distorts the judge's ability to evaluate the animal's true worth at the moment it enters the ring.

Once fancy points and the show judges' preferences are included in the standard of perfection for a breed, the selection of breeding animals tends to conform to easily-judged phenotypic qualities rather than important economic and genetic qualities which cannot be evaluated at a show. When geneticists have studied the relationship between show points and economic value, the correlations have always been insignificant. In the production of economically useful animals, such as cattle, swine, egg-laying breeds of poultry and horses, the show-ring can be more of a menace than an aid to breeding. The alpaca industry needs to work hard and be thoughtful to avoid these pitfalls.

Breed type

If a Hollywood producer needed an alpaca for his movie, he would call central casting. They would try to send him an alpaca that would 'look the part'. This would be perfect 'type' casting. The picture at the beginning of this article is an artist's rendering of Accoyo's Shere Kahn which many breeders believe represents ideal Huacaya 'type'. The definition of breed type is created by the visual picture of the characteristics which are considered typical or ideal for a breed. The ideal breed types are often based on the details of conformation and color which have no relation to the economic productivity of the animals. Examples include: the shape of horns and the color pattern in cattle, the shape of ear in swine, and the color of the face and shape of the ear in sheep.

Breeders pay attention to breed type mainly because it is a 'trademark' and some additional evidence that the animal in question conforms to the ideals of the breed. Breed type is a matter of beauty to the breeders who have long been breeding and admiring a particular breed. But beauty is subjective. Most of us can bring ourselves to think that any particular type is beautiful if we work with it long enough, have our money invested and find it profitable. The breeders of other breeds may not share our enthusiasm for alpacas, but that will never diminish our devotion to the beauty of our animals.

Breed type often originates unconsciously with breeders who embrace the traditional animal or their perception of the ancient purity of a breed. It is easy for breeders to persuade themselves that 'the best animals of the alpaca breed with the purest blood are thus', and to believe that any deviations from that description indicate impurity. This happened, to a certain extent, in the U.S. alpaca industry with the introduction of Peruvian imports.

The Hereford breed of cattle offers an example of how the insistence on a certain breed type changed a breed in a negative way. The original Hereford breed had red spots on their faces and red rings around their eyes. Many of the Herefords imported to America carried these red markings. At first they were preferred and breeders called them 'brown eyed.' Later, the fashion became pure white faces and today few purebred Herefords have red rings around their eyes.

Why did Hereford breeders select the white-eyed type? The answer seems to be that among the first things to appear in the crosses of Herefords with other cattle were red spots on the face and red rings around the eyes. To many cattlemen, this indicated impurity. When this perception became the breeder's customers' opinion, it was almost inevitable that the breeder of purebred Herefords would select for those animals which had the whitest faces and eyelids.

This would have been a relatively harmless change, except that in the southwestern part of the United States, Herefords with white eyelids are more susceptible to cancer of the eyelid. While it is true that a rancher usually has time to cull those affected and to ship them to market without suffering a complete loss, many ranchers today wish that they had kept to the original breed type of 'brown-eyed' cattle.

There is a similar potential for problems today in the alpaca industry. Breeders, their buyers, and some judges seem to prefer huacaya alpacas which have faces entirely covered with fiber – the more, the better. I confess I like the look myself. But excess fiber on the face can inhibit vision and attract burrs and stickers, which can cause eye infections.

Breeders preparing for the show ring often clip the hair from an alpaca's face. They can make the head quite handsome in this fashion and the judges respond. Will selection for heavy face fiber be a good thing in the future, when alpacas are raised for commercial fiber? Probably not, if we carry it to extremes. I also realize that an alpaca's face 'cleans up' as it gets older, but this is an example of a trait which could get out of hand for the sake of type.

The value of characteristics: fleece versus breeding stock

Character	Fleece production	Breeding stock production
Fleece weight per head	As high as possible	As high as possible.
Staple length	There is an optimum intermediate range of staple lengths. Shorter fiber is less valuable. Longer fiber is overgrown. Both may command a lower price per pound than wool within the optimum range of 3 1/2 inches.	The faster growing, the better.
Fiber diameter	Fiber of a lower diameter commands a higher price per pound. More important in huacaya than suri.	Fiber of a lower diameter commands a higher price per pound and breeding stock with lower micron counts sell for premiums.
Crimps per inch (huacaya)	The higher the better for huacayas. A fault in suris.	The higher the better, for huacayas. A fault in suris.
Lock structure (suri)	Not important so long as staple length is adequate and luster present	Very important.
Color	White fiber is, on average, more valuable over time.	Color in breeding alpacas can attract a premium. Often the rare colors are more valuable. This premium changes over time to reflect breeder preference.
Handle	The softer the better. Largely dependent on fiber diameter.	The softer the better. Largely dependent on fiber diameter and is more readily assessed in the field than micron count.
Medulation	Absence preferred.	Absence required.
Uniformity of color and fineness	The more uniform, the better.	Important, the more uniform, the better.
Conformation faults, such as cow hocks, swampy back, sickle hocks	Not applicable.	Important.
Clean face and points, absence of muffled face	Not applicable.	Important.

Why is breed type important?

Breeders pay attention to outward appearance or type in making their selections for two reasons. First, the breeder may want to breed a certain type because it has a market value. If a market demand exists for a certain type, the breeder may not care whether that type really will furnish the maximum production profit. The fact that the buying public wants it and is willing to pay for it is the thing of immediate practical importance.

Second, breeders may believe that type and productiveness are closely correlated and that, if they select for type, they will get productivity.

Type has some sale value in all classes of livestock. In extreme cases, beauty may be the main object. This is often encountered in 'pet and fancy stock', such as dogs, and is an important feature of horses. If the breeder's customers center their demand on type, breeding for productivity becomes secondary. If breeders' customers are looking for productivity, breeders may only be interested in type if it helps them achieve productivity.

Alpaca breed type

An ideal alpaca's look begins with the head, a dense top knot, well covered cheeks converging with the wool cap to form a close 'V' at the eyes, which are brown. The ears are shaped like an arrowhead and erect. The muzzle is soft and wedge shaped. The head and neck make up about one-third of an alpaca's height, with the neck connecting at a right angle to the back, which is straight, dropping off a bit at the tail.

The ideal alpaca has a squared off appearance, with four strong legs setting squarely under the alpaca, giving it a graceful stance which is completed by abundant coverage down the legs.

The stars of any herd will catch your eye with an alert, erect appearance. Their fleece will open into well organized locks of soft, bright and lustrous fleece, which handles like silk.

Above all, an ideal alpaca will never be mistaken for a llama.

Hopefully, the alpaca breeder will give adequate attention to both type and productivity. The breeder who pays too much attention to type may sacrifice the selection necessary for superior production.

To bring a balance between form and function, breeders need to understand the economic value of an alpaca's characteristics.

Alpaca value characteristics

An alpaca's characters or traits should not exist just to suit a breeder's fancy. To be included in a selection program, they should have either a cash value, a breeding value or a marketing value. A character may, at times, qualify on all three points.

The alpaca industry is really two industries in one: fiber production and pure blood stud breeding. In North America, the fiber industry is currently economically unimportant relative to the sale of breeding stock, but in the future that will change.

Fig. 1: Cash value characteristics

Characteristic	Percent of Value
Fineness or average diameter (FD) The primary determinant of value in the textile market is micron count.	65-80%
Staple length Determines which spinning system will be used, woolen or worsted.	15-20%
Tensile strength Please note, alpaca fiber is not sold based on tensile strength because it is rarely, if ever, too weak to spin.	5-10%
Cleanliness Buyers of raw fleece estimate the clean yield of raw fiber when making pricing decisions	5-10%
Color Alpaca fiber is the only natural fiber which can command a premium based on color although, historically, white fleece has been the most valuable	Depending on current fashion
Uniformity (C of V) A uniform fleece spins finer garments with better handle	No premium currently paid
Degree of medulation A highly medullated fleece indicates an alpaca which may have llama blood in its background or is poorly selected.	Generally reflected in premium for fineness

Fig. 2: Traits of commercial importance to textile manufacturers

	Scouring & Top making	Spinning	Weaving	Dyeing & Finishing	Garment Manuf.	Garment Appeal
FD	+++	++++	+++	+++	+++	++++
CV	-	+	+	+	-	+
Contamination						
Other fibers	+	+	-	+++	+	+
Non-fibrous	++++	+	-	-	-	-
Length	+++	++	+	-	-	-
Strength	++	+	+	-	-	-
Color	+	-	-	+++	-	+
Crimp	+	+	-	-	-	+
Style	++	+	-	-	-	-
Entanglement	+	-	-	-	-	-

Source: Whiteley (1994)

Cash value characters

A cash value character is one that is saleable or can have immediate effect on the price of a product. Examples of cash value characters in alpacas are fineness, staple length, tensile strength, cleanliness, color, and degree of medulation. Each of these is saleable and is a characteristic of high quality fleece. The market place creates price premiums for these characteristics. Studies have determined that manufacturers pay for all natural fiber based on the criteria listed in Fig. 1.

Alpaca breeders should select alpacas for their breeding programs that will produce commercially valuable fiber. Carefully selecting for fiber fineness, length, color, uniformity, and an absence of medulation should be important to every alpaca breeder. The relative importance of various traits to textile manufacturers is shown in Fig. 2.

Fineness (FD)

Fineness is the primary determinant of price because a fiber's micron count determines its end use. Fine fiber is generally more valuable because it creates apparel that is soft and can be worn next to the skin. At the other extreme, coarse fiber is used for carpet wool. There are a whole range of uses for alpaca fiber, each demanding a specific diameter of fiber. As you can see from Fig. 3, which summarizes American consumer preferences for garments of the same style, color, and construction, consumers prefer soft, lightweight fabrics. To create these garments, fine fiber is required. Fully 40% of a consumer's satisfaction depends on fine fiber.

The balance of the properties preferred by consumers, such as shape retention, easy ironing, etc. have to do with manufacturing techniques and chemicals and are not determined by fiber qualities. Lightweight garments are the overriding long-term fashion trend. They can not be made with coarse fiber.

Fine fiber is in short supply and it can sell for ten times as much as coarser fiber. Approximately 7% of all alpaca fiber in Peru grades Baby at 21-22 microns. Most fiber animals grow fleece of more than 24-25 microns. Garments made of fiber averaging more than 21 or 22 microns often itch or feel prickly to the wearer. Cloth made of fleece containing 5% of fiber over 30 microns also itches, even if it averages only 21 microns.

Staple Length

Alpaca fiber's staple length is important. Length commands a premium in the textile market because it enhances the manufacturers' ability to spin fine, strong yarns for weaving. Fiber must be at least 2½ inches and preferably 3½ inches or more to be used in the worsted system. The finest, lightest cloth is made from worsted yarn. Short fibers are used in woollen yarns to make sweaters and generally sell at a discount.

Color

Ideally, color should be uniform over the entire body of the alpaca. When producing fleece for commercial sale, breeders should avoid selecting for secondary colors which require additional labor to sort. Another problem with uneven colors within the fleece is that they do not take dye evenly.

Uniformity (CV)

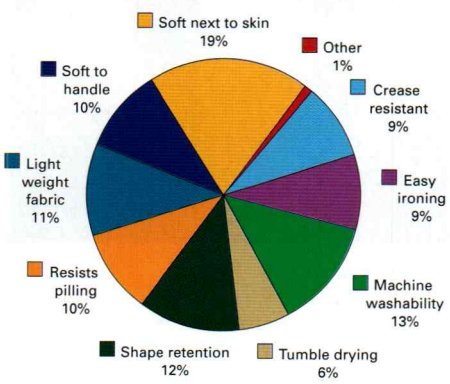
There is considerable research which establishes that a more uniform fleece is more 'spinnable'. A fleece with a coefficient of variation (CV) that is 5% less than a fleece of comparable micron will spin a yarn that performs as if the fleece were one micron finer. The most effective way to select for uniformity is to breed for alpacas with a lower average micron count. A finer fleece generally has less standard deviation. Many breeders also believe that a cria with a lower standard deviation is more likely to maintain fine fiber as it ages.

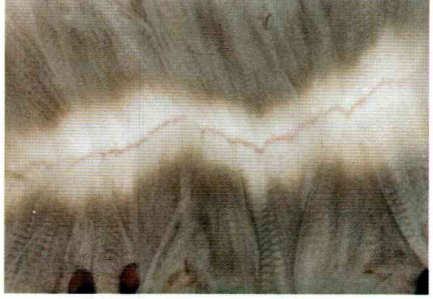
In the field, an alpaca with a uniform fleece can be detected in several ways. A uniform fleece opens cleanly, like a book, not a rose. The crimp or lock style found in the uniform fleece will have the same look and structure at the shoulder, midside, and hip. When the crimp or lock structure extends down the legs, under the belly, and up the neck, the fleece tends to be more uniform.

Medulation

Medulated fibers are the coarse thick bristles that constitute the second coat of guard hair often found on a llama. Alpacas should be selected against this trait. Medulated fiber often exceeds 40 microns and can range up to 100.

Fig. 3: Preference share amongst fabric features, U.S. consumers





Accoyo plantel female fleece. The fleece opens like a book, clean and uniform.

A breeder can visually detect medulated fiber on an alpaca. Medulated fiber is far less likely to crimp. Most alpacas have medulated fiber in their chest or apron and in the britch and belly. A breeder's goal should be to eliminate guard hair first from the blanket area and then from the entire animal. When assessing medulation, study the right hand tail of the histogram for evidence of coarse fiber. The percentage of fiber over 30 microns is quantified on most histograms and is a guide to the amount of medulated fiber in a given fleece.

A breeder can cut a lock of fleece from an alpaca and then look for thick fibers among the finer ones. Pull at the lock from the tip, if an inordinate number of thick fibers slides from the lock, the alpaca is likely to have a medulated fleece.

Breeding value characteristics

Breeding values for genetically heritable traits allow for the effective selection of cash value characters and purchasers pay for alpacas with these traits. Fiber fineness, which was discussed at length above for its commercial value, also has a breeding value because it is highly heritable. Another example is fleece weight, which is the result of the number of fibers growing on a given area of skin, or 'fiber density', it has a genetic value to breeders, but you can not receive a premium for density from a fleece buyer. It is also possible that a fleece with a high number of fibers per unit area might offer better resistance to dust and help produce cleaner, more valuable fleece. Crimp, lock structure, color, and size are other examples of breeding value traits. Luster in a suri's or huacaya's fleece is valuable to the extent it can be passed on to the offspring.

Density

From the breeder's point of view, density is one of the alpaca's most important production traits. Ultimately, the purchase price for fiber of any grade is based on its weight. The textile manufacturer doesn't place any value on an individual alpaca's density, but buyers of breeding stock do.

A breeder can determine an alpaca's genetic predisposition to density very simply: weigh the entire fleece of each of an alpaca's cria annually, at shearing time. Alpacas which produce dense cria have high breeding values for density.

In the field, an unshorn animal can be assessed for fleece density in at least seven different ways.

1. *By feel, grab a handful of fleece.* If your hand feels empty, the alpaca has a light fleece. If it feels full, the fleece is dense. This measuring technique allows you to quickly compare a number of alpacas in a given herd.
2. *Inspect the fleece's individual locks.* If they are compact, firm, thick, and solid, the entire fleece is likely to be dense.
3. *Part the fleece and inspect the skin.* If you see a lot of skin, the animal will tend to have a lighter fleece.
4. *Look at the alpaca's head.* If a huacaya has a strong, dense wool cap that grows at right angles to the skin, the balance of the animal will tend to be dense. In the case of the huacaya, if the forelock lays down or hangs, the animal probably has fewer hair follicles per square inch and is therefore less dense. A suri's forelock should be well penciled: fluffy would indicate a lack of density.
5. *Look at an alpaca's overall fiber coverage.* Does the fiber extend down the

legs? Look carefully at the front of the back legs. Do you see fiber or skin and bone? Are the cheeks well fleeced or is the face open and without coverage? More coverage indicates higher density.

6. *Does the fleece 'crack' vertically when the animal walks or turns his body?* 'Cracking' indicates a dense and uniform fleece.
7. *Place an open hand on the surface of the fleece and apply pressure toward the alpaca's body.* The more resistance, the denser the alpaca.

Visual or tactile assessments will never replace a scale, but they can give you a quick appraisal of an animal's density. This is particularly important when selecting animals for purchase if production records are not available.

Crimp

Crimp has been determined to be highly heritable in huacayas and, therefore, has a breeding value. Crimp is defined as the natural wave formation of the fiber, expressed as crimps per unit of length. Visually, crimp is most notable in the well organized staples or locks found in the fleece. Crimp also occurs along the shaft of a single fiber. This has been defined by Cameron Holt, of the Melbourne College of Textiles, as *crinkle*. There is a general relationship between fiber fineness and crimp in the huacaya. Suris do not exhibit crimp.

To understand why crimp is an important trait in huacayas, we must first understand why some fleece exhibits crimp and others do not. Fine alpaca and sheep fiber have dual cortical cells, para and ortho. In coarse fibers a hollow core may be visible (medulla) and the cortex is less distinct. The cortical cells in alpaca fiber constitute a variable fraction of the fiber mass, being the lowest in coarse and the highest in fine fiber where the fraction may be 90%.

Alpaca fiber and wool have a bilateral structure. That is to say, the paracortex and orthocortex grow side by side. It is this structure which is believed to give fine wool and alpaca fiber its crimp. Think of a single fiber as a rope made of two independent strands which are twisted together. When twisted ever more tightly, the rope becomes finer and kinks or *crimps*.

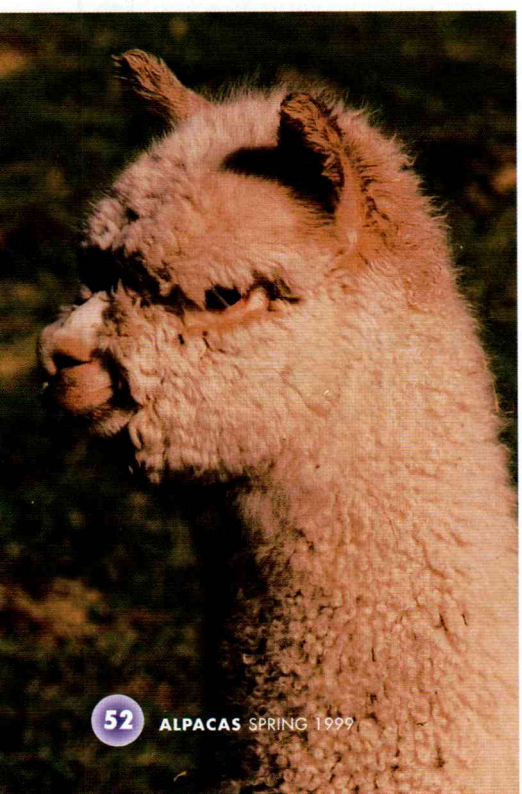
The fleece 'cracks' on the Alpaca as it moves and turns. This is an indication of both density and uniformity.

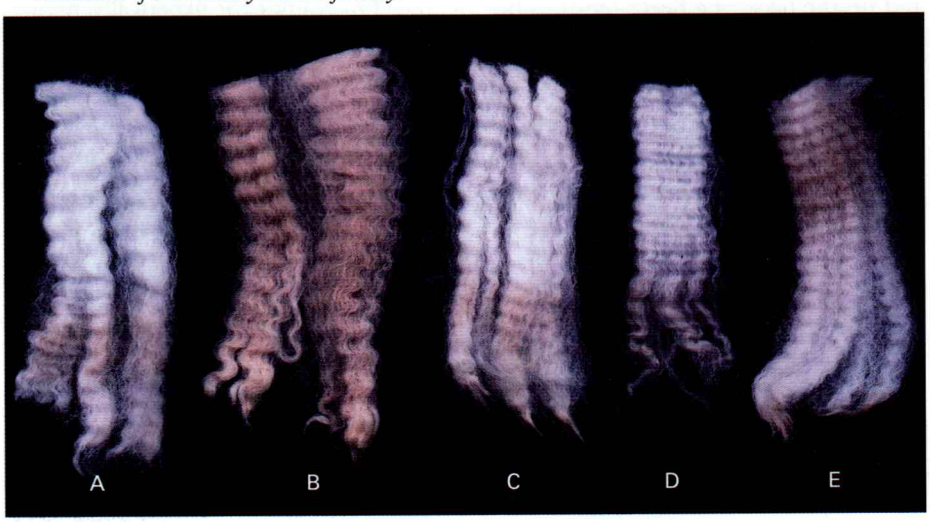
As alpacas age, their crimp tends to broaden and disappear. The fleece becomes coarser each year. The orthocortex also tends to disappear as micron count increases. Breeders should understand this phenomenon and be more reliant on genotype than phenotype when assessing the crimp producing capacity of alpacas, particularly older males.

Dr. Jim Watts, a well respected animal researcher and wool specialist, has spent several years studying alpaca fleece characteristics on behalf of Coolaroo Alpaca Stud in New South Wales, Australia. He had this to say about crimp as a characteristic in *Advanced Alpaca Production, Breeding from Fibre to Fabric*,

> 'Because alpaca fiber crimps or waves at regular time intervals, faster growing fibers automatically display bolder crimp or wave frequencies. Do not assume that bolder crimp equates to stronger (*coarser*) fiber diameter; from recent textile research of Merino wool it is now known that bold, deep crimping wools are the soft-

Northwest Alpacas Accoyo Cria





A. Accoyo's Legend at 7 years of age. 5 crimps/inch; 1.97 crimps/cm; 23.6 microns.
B. Accoyo's Victor at 7 years of age. 5.5 crimps/inch; 2.17 crimps/cm; 22.6 microns.
C. Accoyo's El Moustachio at 8 years of age. 6 crimps/inch; 2.36 crimps/cm; 23.5 microns.
D. NWA's Antonio at 12 months of age. 6.5 crimps/inch; 2.56 crimps/cm; 18.5 microns.
E. Peruvian Hemingway at 8 years of age. 7 crimps/inch; 2.76 crimps/cm; 22.2 microns.

est, finest and best processing fibers. In the huacaya alpaca we should be looking for and breeding these bold, deep crimping wools.'

At Northwest Alpacas, crimp has a breeding value. The crimp found in an alpaca's fleece is evidence of the following characteristics:

- Crimp generally indicates fineness. Typically, the more crimps per inch, the finer the fiber. While this is not always true, it does serve as a visual guide when assessing alpacas in the field. The most accurate way to measure fiber fineness is with a LASARSCAN or OFDA machine.
- Crimp is an indication of density. A dense, crimpy fleece often has a well organized lock and staple structure that allows for more and longer fiber to occupy a smaller space. (Much like a well folded newspaper which occupies less space than one which has been wadded up in an unorganized fashion and piled on the floor.)
- Crimp indicates uniformity in the fleece. A highly uniform fleece will typically exhibit the same crimp characteristics over the entire body of the animal.
- The presence of crimp indicates a lack of medulation in the fleece. Coarse medulated fibers lack orthocortex, grow straight and do not crimp.
- Once it is processed, a well crimped staple measures longer than a comparable length staple without crimp. Understanding this allows the breeder to select for longer staple length by breeding crimp into alpacas fleece.
- A fleece with high crimp definition will stay cleaner and more compact from one shearing to the next.

Textile manufacturers don't pay a premium based solely on crimp, but it is considered an important trait in the manufacturing process (see Fig. 2). For many years, wool graders used crimp per inch to predict fineness and, therefore, price. But, with the advent of sophisticated electronic measuring devices, there is less and less reliance on crimp as an indication of fineness by manufacturers. Nevertheless, crimp assessment is still a useful selection tool for the alpaca breeder grading animals in his herd or making purchasing decisions, hence it has a breeding and a marketing value.

Color

Alpaca fleece is marketed in many colors and color is an inherited trait which is easy to select. White is the color most desired by textile manufacturers because it can be uniformly dyed any color. Many mills will not purchase fiber if it contains more than ten dark fibers per 100 grams of fleece. Purchasers of breeding stock often pay premiums for certain colors and the rarest colors often bring the highest premiums.

Size

Size is highly heritable in all livestock breeds. Alpacas which are big and bold, exhibiting good vigor, fertility, and reproductive ability, are sought by knowledgeable purchasers of breeding stock. Small animals sometimes have more reproduction problems and produce less fleece.

Luster

Luster in the suri and huacaya is thought to be heritable. A bright, lustrous fleece is of considerable value, particularly to purchasers of breeding stock. The hallmark of the suri is luster and it is important to the textile manufacturer because almost all suri fleece is used in outerwear. Coats made of suri glisten like mink and are often called 'green' fur coats.

When considering alpacas as the sale product, genetic or breeding values, such as density, crimp, color, size, and luster or brightness, would be considered by most buyers to have a cash value.

Marketing value characteristics

A character with marketing value affects the price realized for the product by improving its presentation for sale. In the case of alpaca breeding stock, a certain type or color might have market value even though the fleece of the animal lacking type might sell at the same or discounted price. Marketing value characters enable cash value characters and breeding value characters to realize a higher price by improving the marketing environment.

Because the distinction between cash value characters, breeding value characters and marketing value characters depends on the outlook of the buyer, the value of some characters may change from one category to the other, or even cease to be credited with any value at all. Many of the breeding value traits described above also have marketing value (Fig. 4). The manufacturer knows from experience that he can spin a longer and thinner yarn from wool with a low average fiber diameter and the wool buyer puts a cash value on fineness. Staple length is also of great importance in the manufacture of yarn and has a cash value. Type or density is of no value to the fleece buyer, but is very important to the buyer of breeding stock.

Breeding objectives

Breeders need to assess their goals and determine their breeding objectives while taking into account the value of the characters they decide to include in their selection programs. There will always be a healthy difference of opinion on what objectives should be included in a breeding program. Some of the traits to be considered which would influence a breeder's objectives are:

1. Fiber fineness
2. Density
3. Uniformity
4. Color
5. Size
6. Conformation
7. Crimp Definition
8. Luster
9. Vigor
10. Type/Visual Appearance
11. Lock Formation
12. Show Performance

Fig. 4: Characters for fleece cash value, genetic value and marketing value

Characters with cash value for fleece	Characters with genetic value for breeding stock	Characters with marketing value for breeding stock
Fineness	Fineness	Pedigree
Staple length	Density	Breed Type
Color	Uniformity	Fineness
Cleanliness	Crimp (huacaya)	Density
	Lock (suri)	Uniformity
	Luster	Crimp (huacaya)
	Color	Lock (suri)
	Size	Color
		Luster
		Size
		Fleece coverage

Generally speaking, the objectives at the beginning of the list are more easily measured, while the traits toward the end of the list are more subjective. By focusing on the few easily measured traits, a breeder's goals will be more readily attained and progress will be easier to demonstrate. The subjective traits are harder to measure and will be more difficult to achieve. Breed standards are a starting point for the measurement of progress.

Due to a very crowded magazine, we have had to split Mike Safley's article into two. The remainder of 'Pureblood Part 4' will be published in December.

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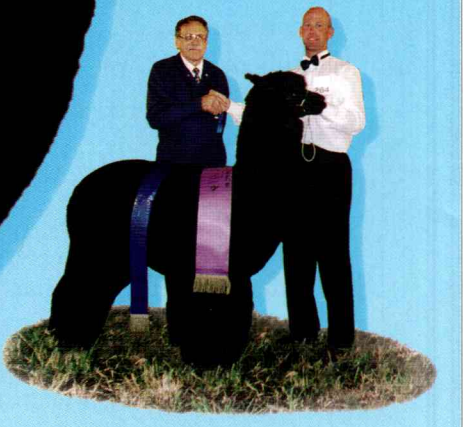

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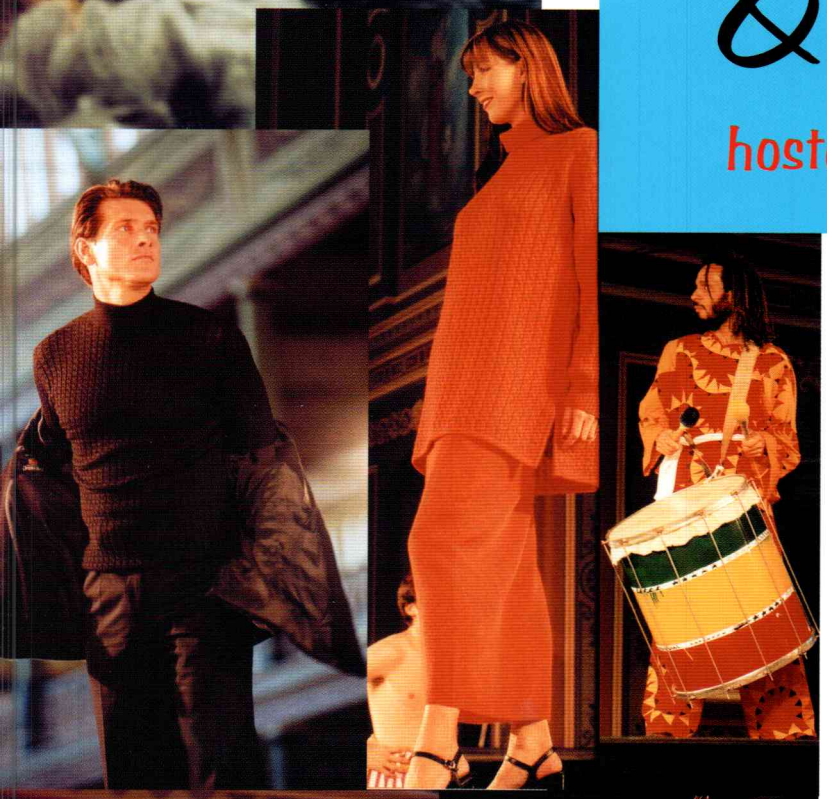

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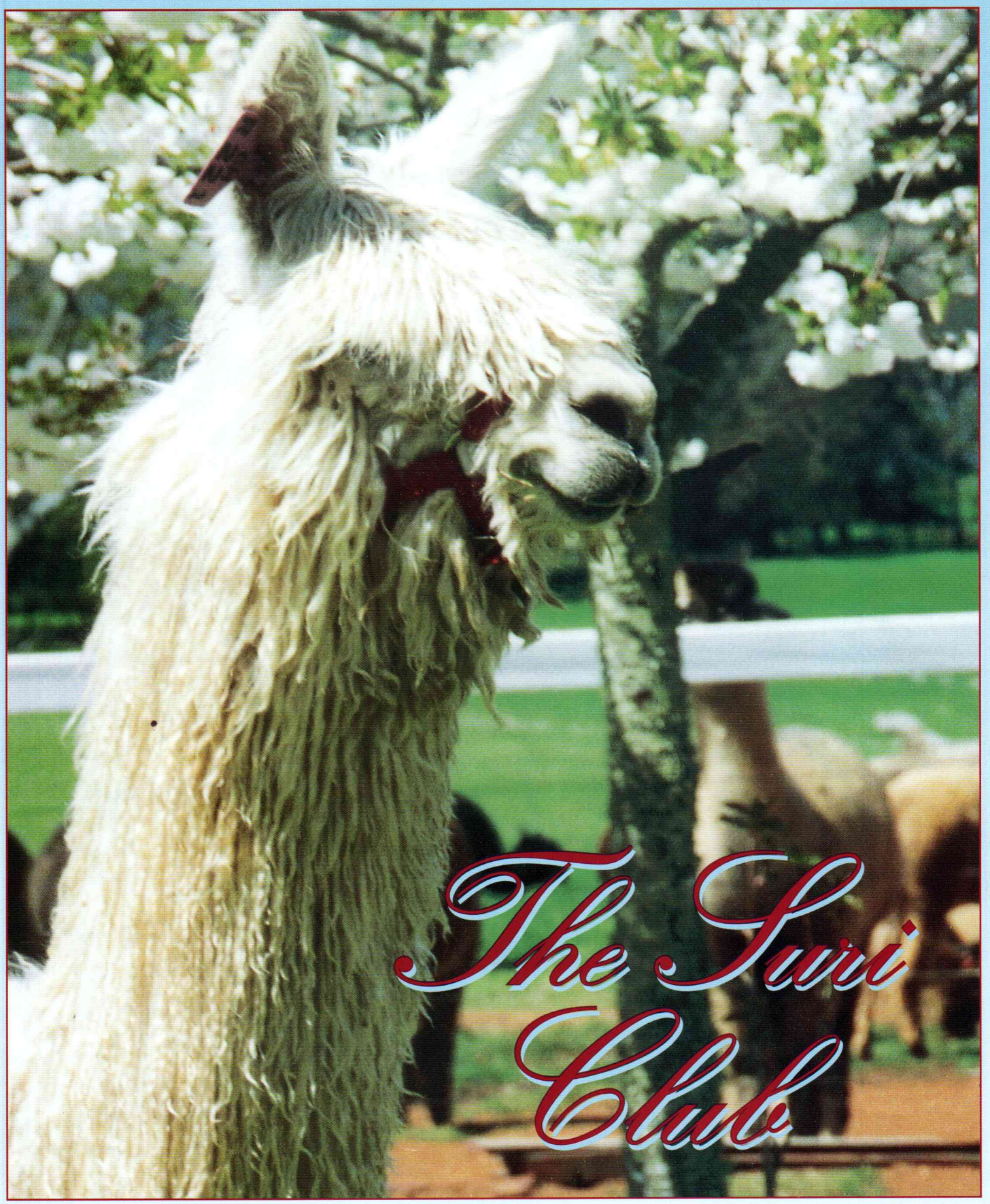

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