# Snowmass Alpacas

## The Making Of Champions

PART ONE
HUACAYA

Snowmass Alpacas is an elite collection of world class alpaca genetics highly selected and bred to create one of the most unique breeding herds in the world. Our goals have been directed towards creating a herd of alpacas that emulate the original ancient Incan alpaca and to advance them even further as we move into a world market for ALPACA.

## Introduction

Wool classing and fiber grading for quality and textile superiority is a science most of us do not fully understand. Yet this is the main characteristic for which we breed alpaca. We are sold alpaca largely on good looks and good marketing. This is partly due to the fact that the leading information on breeding elite-fleeced alpaca is just now coming to the forefront of our industry. The United States is not a country that has much to do with the international wool trade and so we have lost much of the science and understanding in textiles and sales of wool on a commercial level. We are a young industry and the fancy charming and exotic qualities of the alpaca are what has been the best selling factor for many years.

Good marketing in the alpaca industry is sometimes better than the best alpaca.

This is a concept that we as well as many dedicated alpaca breeders wish to dispel. It has inspired us to share our 20 years experience and alpaca breeding goals with our country's alpaca breeders.

Our goal is to not lose sight of breeding the finest alpaca and to help insure that North America becomes one of the finest producers of ALPACA in the world.

Here in the USA, we may not have the most alpacas but we have the highest concentration of the very BEST.

# The pre-Columbian Alpaca

The pre-Columbian Indian people of South American established the true elite textile producing alpaca breeding programs that we most admire. Their secrets as well as the alpacas were virtually lost in time with the demise of ancient Indian civilizations. Lost, maybe, but not forgotten.

Julie Skinner 1979

Jane Wheeler is a renowned and much admired archaeozoologist. She and her colleagues have been studying the pre-Columbian and Incan civilizations alpacas and textiles in Peru for over a decade.

Her findings bring enlightenment to the silent secrets of the pre-Columbian alpaca breeders and their textiles. Her latest studies in Peru involving the pre-Columbian civilization and their textiles have revealed that a pre-Columbian alpaca most closely related to the vicu a grazed in the El Yaral's pastures 500 years before the rise of the Incan Empire.

These alpacas were unlike any in modern day South America. Jane Wheeler has collected a DNA bank of more than 2,000 camelid samples for studying the molecular markers to distinguish one specie of camelid from another. From this information, she can see the proportion of which species exist within these markers.

Wheeler's studies have led to the first scientific insight that hybridization is a far greater problem than anyone suspected. In fact, 90% of modern day alpacas have a mixed genetic make-up (Guanaco Llama and Vicu a and Alpaca genetics) and the true ancient alpaca may actually be extinct.

The pre-Columbian herds which were further advanced by the Incan Camelid breeding programs were virtually eradicated with the arrival of the Spanish. (Those that escaped into the highlands and far reaches of Peru could not prevent the contamination of the pure breeds.)

Julie with hybridcross, Machu Pichu 1979

Julie Skinner 1979

Studies have revealed the Incan llama was purely related to the guanaco and the Incan alpaca to the vicu a. These pure domesticated breeds of alpaca and llama were interbred in this great Spanish escape and continue to be crossed to date. According to renowned Peruvian agronomist, Rigeberto Calle Escobar, 84% of all Alpaca production is in the hands of peasants who live in the highlands of Peru. No one quite realized just how much llama and or guanaco influence were included in these alpaca herds until Jane Wheeler and her colleges discovered and studied their DNA markers.

Some of this hybridization has been advantageous. For instance, in meat production and volume of fleece, (greater weight) it resulted in a better dual-purpose breed. This advantage helped the Indian farmers through many years of hard times in the highlands of Peru. They were paid for volume of fleece as well as weight of carcass for meat. In this sense, large was better. These crosses are also extremely hardy, excellent milk producers and give birth to larger framed cria.

The disadvantage has been in the royalty fiber and textile production which came from the true vicu a–alpaca breeds. The textiles that these true breeds of pre-Columbian alpaca fashioned are unlike any made in modern times. Some are kept, like the treasures that they are, by Incan families as heirlooms. Others have been uncovered from ancient tombs and burial sites and are ket in museums and universities. Only the vicu a and guanaco can truly reflect the purity of the pre-Columbian and Incan textiles. As new archeological ruins are uncovered, we are finding out more about these peoples and their textiles as well as the genetic makeup of the original alpaca. For the most part, they were closer to the vicu a than most alpacas in existence today. Their fiber was as fine as vicu a and created the finest textiles ever to be discovered.

Julie Skinner 1979

# What Makes An Elite Alpaca.

The key questions we have been asking ourselves are: What are the differences in our alpacas compared to those bred in Ancient South America, and just what defines an elite alpaca today? The main incentive for all alpaca breeders is that vicu a wool still sells for $400 to $600 per kilogram, which is 20 to 30 times the price of alpaca wool.

The diversities found in modern alpacas are the result of long term cross-breeding. The wide range of fiber qualities that exist within modern alpaca herds make it very difficult to compile large lots of under 20 micron handling fiber for specialized commercial production.

The differences within fiber types are not just in fineness but other fiber characteristics as well; Crimp, architecture of the crimp, scale height on the fiber itself (which creates variable degrees of luster and hand), fiber length, degree of wool fibers (produced by secondary follicles) to more protective medulated fibers (produced by Primary follicles), and concentration of these fibers within the fleeces themselves are also factors.

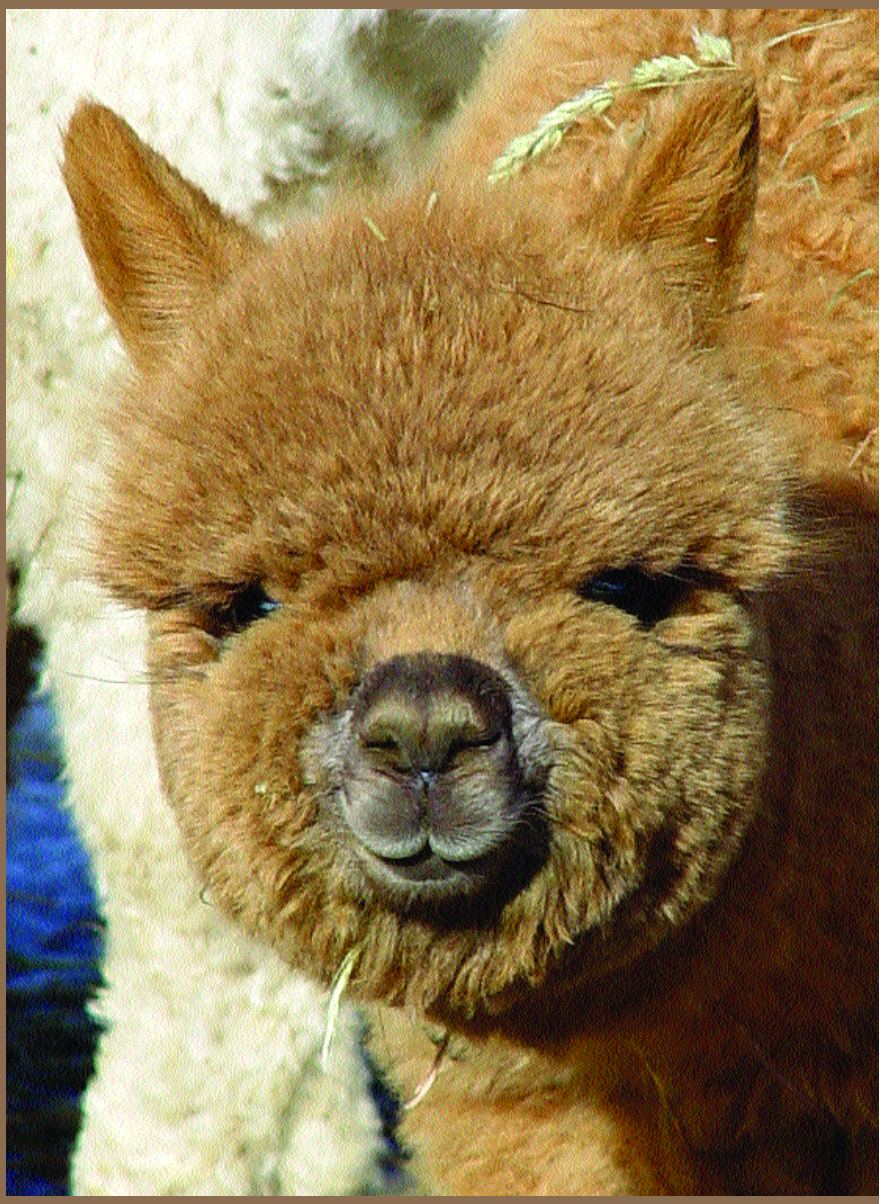
There is much debate about which fiber characteristics are the most advantageous in breeding programs. For elite textile production, the most valuable is a simple recipe that relates best to the vicu a which is more closely related in fiber type to guanaco, cashmere, quivoc, and Tibetan Antelope (Chiru).

What these elite fibers all have in common is that they are all within a 16 micron range, if not finer. Most of these fibers are short in length. However, because of the uniformity in their fineness and fiber characteristics, this fiber still spins to an exquisite and highly sought after yarn.

We believe that with better understanding of the vicu a fiber characteristics and proper breeding selection we can (and have begun) the process of recreating the Incan Alpaca.

The alpacas in South America that have the most consistent breeding programs for fine textile production today are those that have been breeding in hand with commercial interests of the Mills. These herds are predominately white and fawn and are found in select regions of Peru. The Rural Allianza cooperatives are considered the finest volume alpaca wool producers. Elite alpaca programs like the rural Allianza cooperatives are found in the heart of Peru's alpaca-breeding country. For example, Sollocota, Accoyo, Cconchatanca, Puno and Cangalli are located there.

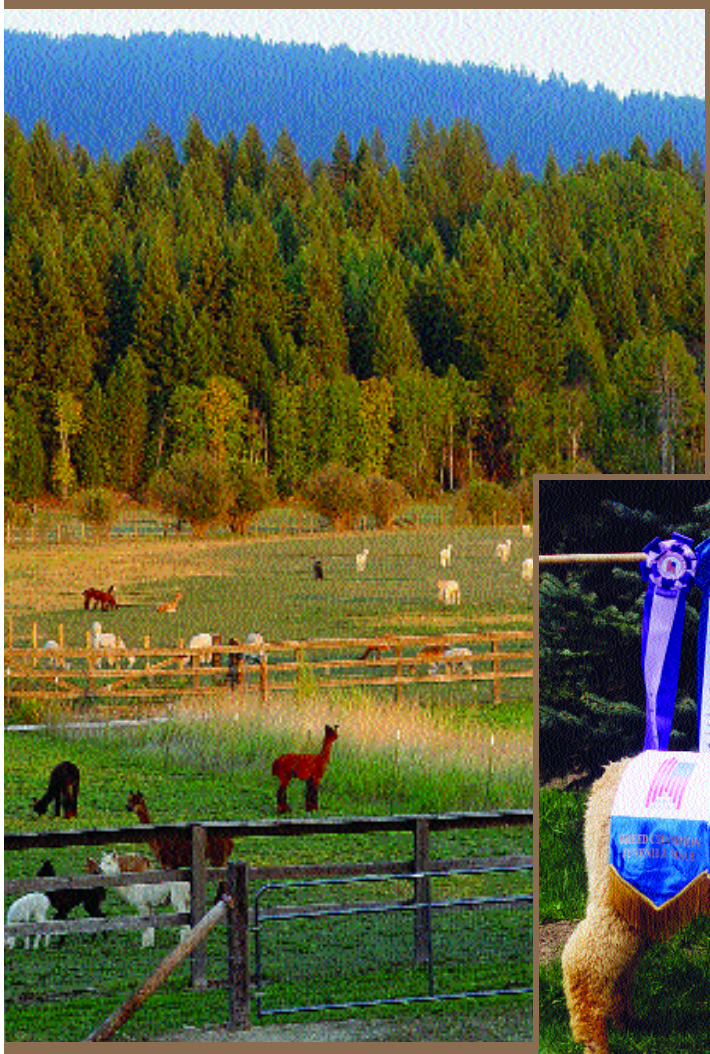
This is the same area where the pre-Incan culture Tiwanaku reigned. Tiwanaku was the largest pre-Incan urban center in the altiplano and was in control of the largest number of alpacas and llamas in all of South America.



Some of the first Peruvian imported studs came from the Rural Allianza into the USA. Many are recognized for their fine production records. For example, Hemingway, Don Julio, Bueno, and Drambuie, came from the Rural Allianza.

Other important elite fiber producing studs such as Snowmaster, Legacy, Elite, Chacu, Andean Gold, Red Hot, Incan Magic, came from near by regions and have been as important and influential for our as well as many other Elite Breeding programs outside of Peru.

Unfortunately not all South American farmers produce fine grades of fiber largely due to the fact it is has not been practical or economical for them to do so.



Most mills paid farmers for the volume or weight of their clips. So therefore, it was more advantageous to breed larger framed alpacas that carried heavier fleece weight which was also typically stronger in micron.

The other advantage with larger framed alpacas is they have better carcass weight (for meat production). This is an important economic factor for most breeders and can present as much of a financial reward as the fiber they shear. In some instances much of this breeding for a larger frame enhanced the llama and guanaco genetics within the alpaca breed.

There has always been a strong interest in breeding alpaca wool for fineness. The Peruvians are as aware of what makes and ultra fine fiber for textile as their ancestors.

There are many extraordinary fibred alpacas and breeding farms in Peru that are producing these alpacas. However the economic incentives for producing finer fiberd alpacas on a larger scale has not been recognized. Many farmers can not afford the kind of breeding facilities conducive to advanced breeding techniques.

With growing international interests in raising alpaca and the cumulative years of exporting some of their finest alpacas, the Peruvian government and textile businesses have come to realize there is a growing viable international alpaca market. They are aware that it will soon bring competition to what has been an exclusive market for them. This, along with new archeological finds, has given Peru a strong initiative toward turning their breeding programs back in time to retrieve the textiles of their past and to maintain their leadership in fine alpaca production.

The alpacas that have come into the United States from South America have come from an incredible array of areas and countries.

As a result of so many diverse breeding programs, we have far more diversity of genetics than one could possibly imagine. We also have the technology, breeding facilities, and DNA sciences to create the greatest country of alpaca the world has ever seen.

For as long as we have had alpacas in the US, breeders have been trying to discern for themselves what the recipe is for an "Elite Alpaca". Like us, many have had an elite textile production herd in mind from the onset and are well along the way to establish one.

Today we are using more advanced methods of science to understand just what makes the ultimate and elite breeding alpaca. Besides a sound genetic base, we want an ultra fine fleece production from our alpacas, equated by fiber measurements and skin follicle testing. This information will ultimately focus our directives in our attempts to breed elite alpaca for elite textile production.

# Comparing Alpaca To Other Wool Breeds

What value is there in comparing alpaca & sheep breeds? Like sheep, alpaca have evolved far from their original ancestors through processes of evolutionary mutation. This selective breeding and cross breeding was for their valued wool and for meat production. The outcome for both sheep and alpaca breeds has been a vast and variable population of individuals. They express differences in body types and fiber characteristics that show some very interesting similarities.

The sheep industry has established many different breed types reflective of these differences.

The only classification made for the alpaca breeds are the Suri and Huacaya. There are however enough distinct fiber differences in the Huacaya fleece and body types to be classed into individual types as has been done with sheep breeds.

Much of the alpaca wool classing outside Peru has been based on sheep wool comparisons, which we as sheep breeders have come to understand.

We have attempted to make sense of these differences by comparing six major sheep breeds we see similarities in. The only fleece type which is unique to any sheep breed is the vicu a and alpaca–vicu a breeds.

We have come to understand that there are two very distinct fiber developments happening within the huacaya alpaca. The first alpaca type holds true to its vicu a genetics and is probably much more closely related to the pre-Columbian alpaca. The second alpaca type has evolved through direct and indirect breeding selection into a vast array of different fiber characteristics as well as body types. Most of these are closer in character to the sheep wool breeds.

In order to better distinguish the two types, we have created terminology for each type. We call the pre-Columbian (vicu a type) the "Incan alpaca" and the other the "progressive alpaca".

These types have been referred to as "primitive" and "advanced." However, we feel primitive is not the word for a specie of alpaca that has undergone hundreds of years of specialized breeding to produce a royalty cloth unlike anything we have produced to date. Further, advanced does not suite a breed which is in a progressive stage of continual evolution.

The progressive alpaca is one which involves a history of mixed breeding selection. This changed the alpaca dramatically over time and is expressing many different fleece and body types from the original alpaca (Incan Alpaca). This is the type that we are making sheep comparisons with.

**Merino Rambouillet Colored Merino Colored Corriedale Romney Romney Lincoln**

**Top Row Sheep breeds – Bottom Row progressive Snowmass alpaca fleece types.**

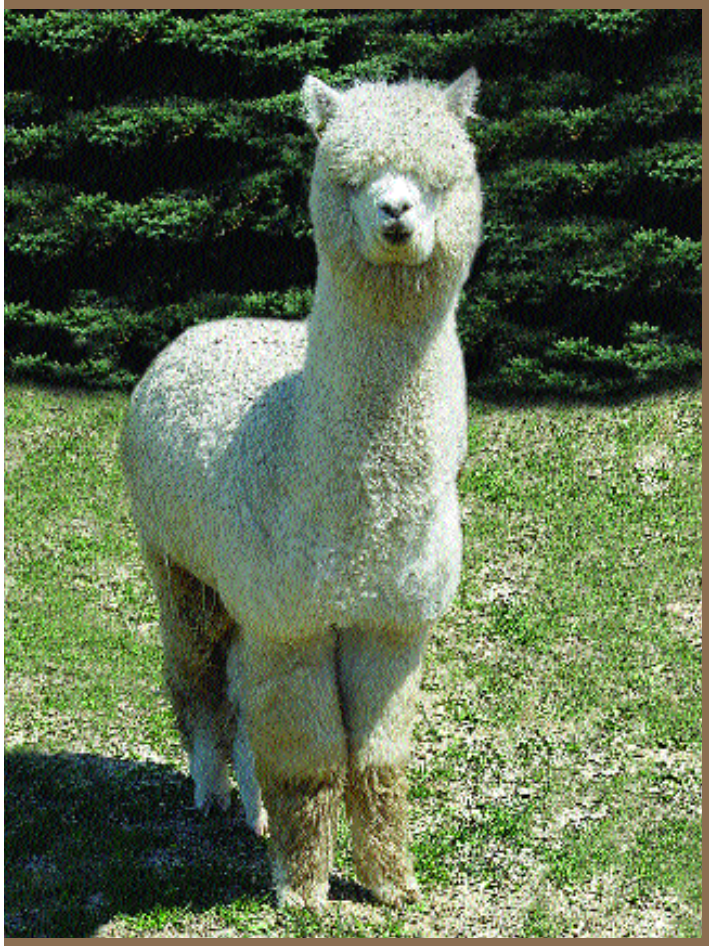
We want to emphasize that each particular fleece, with its unique characteristics, may be as economically important as another, as is true with sheep breeds. Until we have true textile interests that tell us otherwise, we should try to realize the value within each alpaca fleece type.

There are hundreds of sheep breeds and they all have very important and specific economic values. The value in comparing the progressive breed of alpaca with established breeds of sheep is to reflect some of the similarities seen within Alpacas.

The following comparisons present some examples of prominent sheep breeds that have been developed according to fleece and body types. The most interesting comparison is seen within the fiber types.

The other interesting comparison of alpaca and sheep is in body type. Meat has been as much an economic factor as wool in both breeds. Even though we do not specifically make selections for better meat production in our alpaca outside of Peru, we have alpacas that have been bred for this very purpose in our breeding herds. As with the sheep, the finer the fiber the smaller the animal, so naturally with a market for meat the interest in adding better frame and size to the animal is an important selection. The general rule of nature is that when breeding to enhance body mass one can expect an increase in fiber mass (diameter of the fiber itself as well as increase in weight).

Merino: The first Merino sheep was developed in Spain. The Delaine – Merino is the most common and finest Merino. It has an unbroken line of breeding more than 1200 years old. The Merinos that have been advanced further are in New Zealand and Australia in the SRS® Merinos. They are some of the finest and densest merino sheep bred to date. There are a few ultrafine Merino breeders in the United States (Snowmass Merinos, Bliss Merinos). The Merino is bred for the finest of wool production. They are smaller framed, have less muscling, lighter carcass weight, extreme fineness and highest secondary follicle density of any sheep breed. Extreme fineness of fiber is the highest economic factor in this breed. Micron range is 13 to 22 microns.



Summary of Alpacas with Merino fleece type characteristics

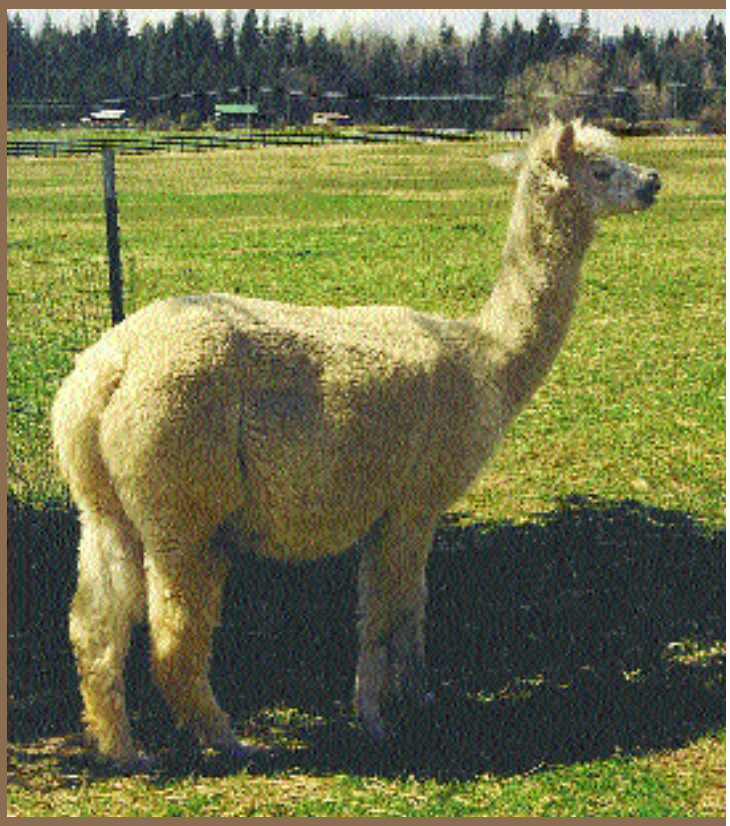
- The alpacas that most resemble the Merino are a minority in the general alpaca population and are just now being bred as a result of intensive breeding selection. They are smaller in size and have an evolved concentration of wool fibers compared to primary fibers. They form in small concentrated bundles of high frequency crimped lockets. The best are under 20 microns and maintain this fineness into maturity. The fiber extends throughout the entire body of the alpaca, including the head and neck and even down the legs. They are much like the Merino as they are smaller in size and frame, putting most of the genetic potential into fine wool production versus frame and body mass.
- Micron ranges from 14 in first years to 23t- microns at advanced maturity; average micron is 20 at maturity.

**Rambouillet:** Rambouillet sheep were bred from the Spanish Merino in Germany and France. They are a foundation breed of the Western US. Developed for a greater carcass weight (for meat and lamb production), they look much like the Merino in wool on the face and legs however are slightly stronger in body and in micron. Micron range 20 to 28 microns.

Summary of Alpacas with Rambouillet fleece type characteristics

- The Rambouillet type best reflects the finer alpaca production available in the world and in the US. They are somewhat stronger framed than the superfine producing alpaca. They are average in size and depict a true alpaca phenotype. Crimp type is very uniform and fine with an even higher frequency of crimp showing some signs of wool clusters (bundles). However, it is not as concentrated or developed as in the merino types. These alpacas are very hardy and produce a very fine fiber.

- Micron Ranges from 17 in first years to 26t- microns at advanced maturity; average micron is 24 at maturity.



**Debuillet:** The Debuillet is a cross of Merino and Ramouillet sheep, bred for harsher, drier climates. They have a finer wool but are hardier sheep and are selectively bred to be clean-headed and faced, reducing wool-blindness. They also lack leg wool so shearing can be specifically concentrated on the blanket area. These sheep tend to be slightly larger in frame for better meat production. Micron 18-24.

Summary of alpacas with Debuillet fleece type characteristics

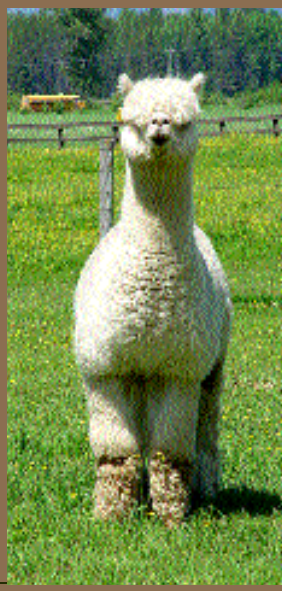
- These are similar to some of the Peruvian alpacas such as from Quenamari, Antacalla, regions of Peru as well as other remote alpaca breeding regions. They are bred with very little head and face wool to reduce wool blindness in the large herds that graze in remote Andean territories. They are also bred with little leg wool to help keep shearing needs to the blanket area only. Their fleeces are fine and as dense as many of the finer breed types, despite this. They range in size depending on farmers' breeding preferences and influence of hybridization. A large portion of these types were brought into the US in the initial imports because of their fine fleece characteristics.

- Micron ranges from 17 in the first years to 28t- at advanced maturity; average micron is 24 at maturity.

**Corriedale:** The Corriedale sheep originated in New Zealand from a cross between a Lincoln and Leicester and Merino cross mix. They have a lock type fleece with higher amplitude of crimp, longer staple length, and produce good carcass market lambs. They are another dual purpose breed. The fiber on the Corriedale is very similar to alpaca fleeces that form into locks presenting deeper amplitude of crimp. Most of these fleece types continue to get stronger in micron and broader in crimp as the animal matures. They are mostly white in New Zealand. However, there are many colored breeders in the US. Micron Range 23-31

Summary of alpacas with Corriedale fleece type characteristics

• The best way to describe this fleece type in alpaca is that it is has larger and more pronounced dense looking locks. It is filled with fibers flowing harmoniously in a high amplitude of crimp and is one of the most striking looking and favored fleeces. If you stretch the locks, you may find there is close to another inch in length. These fleeces tend to be very uniform in crimp. Typicall, ( like in sheep) as the alpaca with this fleece type matures, the crimp gets bolder and stronger in micron. The microns may start as low as 18 but by two years old, they are in the mid 20's and average in the high 20's by age four. Hand spinners and many judges love these fleeces. There is some misconception that because these fleeces are forming into locks they are denser. As we retrieve more information on skin biopsies we think we will find that the follicular measurements on Corriedale fleece types will be similar in follicle ratios to merino types. However, we do not believe they are as fine or uniform in their overall micron. The Corriedale fleece types tend to weigh more, as they are longer-stapled and have stronger micron, creating greater weight. The Corriedale type alpacas also tend to be larger-framed.



• Micron ranges from 18 in first years to 28t- at advanced maturity; average is 24 at maturity. The exception is to select for fineness. We have breeding studs with this fleece type in the low 20's as mature breeding studs.

Romney: The Romney sheep originated in England to withstand cold, wet conditions. They produce a heavy carcass weight and are very prolific milkers. This breed has colored fleeces as well as white, with long, deep-crimped staples that produce a high amplitude of crimp forming in locks and longer in staple. Micron Range 28-40.

Summary of alpacas with Romney fleece type characteristics

• Alpacas with this fleece type have similar amplitude of crimp as Corriedales, however with less frequency, so they have a much bolder crimp than the Corriedale type. They have long staples which form into loose locks. However, they are not as solid and tight as the Corriedale lock type. The micron can be as low as 18 in their first year, however this type of fleece typically gets stronger in micron and bolder in crimp after the first year. We see many of these alpaca fleece types in the Accoyo, Sollocota, and other larger-framed breeding imports. They have obviously been selectively bred for greater fleece weights and larger bodied alpacas.

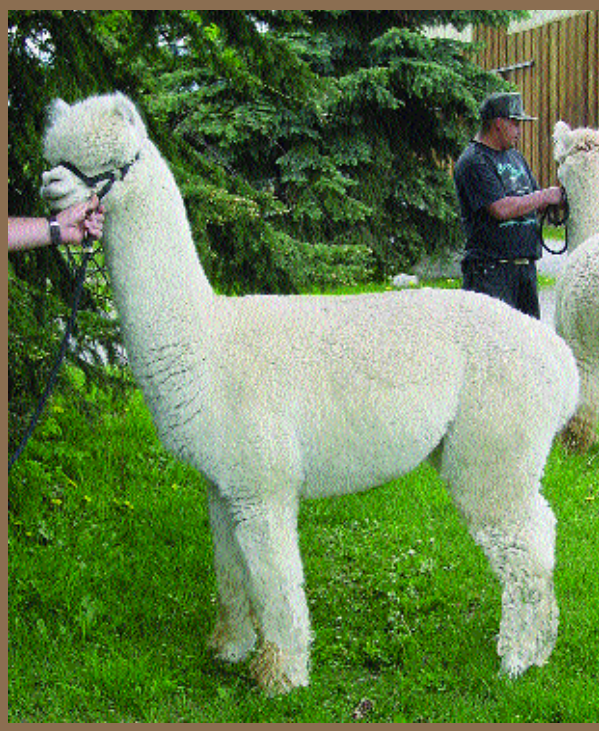
• Micron ranges from 18 in first years and as high as low 30's in advanced maturity; average is 25 at maturity. There is always the exception in alpaca to select for this fleece type and breed in fineness. Snowmass has several studs which are still in low 20's as mature breeding males with this fleece type.

Lincoln: The Lincoln sheep also originated in England. They are a cross with the Leicester and the old Lincoln breeds. The Lincoln is an important contribution to the development of other breeds. It is desirable because it has long lustrous staple ideal for spinning and heavy fleece weight. It is also a hardy dual-purpose breed which is bred with finer breeds to add carcass and length. Micron Range 30-40.



Summary of alpacas with Lincoln fleece type characteristics

• These are very similar in fleece type to the Romney but the distinguishing similarity to the Lincoln is the much higher degree of luster. This fleece type is even broader and lower in amplitude of crimp than the Corriedale or Romney making it appear to have a longer staple length. They are quite fine, contrary to the Lincoln sheep wool this fleece type resembles. They can be as low as 17 microns at early age and increase as they mature. Some can get as high as 30t- micron if they are large framed. We have seen these fleece types in many micron ranges and find that the higher micron, the larger in alpaca is in size. This fleece type is quite unusual. We call it the silky fleece. It has the most amazing brightness that luster is a better description. The only sheep breed we have seen which stands out with this luster is the Lincoln. We have some alpacas with this fleece type that maintain their fineness, luster, length and hand well into their maturity. The exception is that these alpacas are more average in size and frame. The first reaction by most is to say that this type of fleece is not as dense as the more highly crimped fleeces; however these fleeces all have an amazingly high fleece clip weight. We love this type of fleece and find it has all the desirable textile characteristics. (When you feel and see this fiber you may question what makes its character any less desirable than one with lots of crimp).



• Micron ranges from 18 in first years to 28t- at advanced maturity; average is 24 at maturity. Selecting and breeding for fineness in this type Snowmass has studs with this fleece as fine as 19 and 20 at maturity.

**Columbia:** The Columbia Sheep is a breed which originated in the US. It is a cross of Lincoln and Rambouillet. It is the ideal dual-purpose breed and the most popular large flocked sheep in the US. This is because it has a larger frame with heavy wool production and good staple length as well as very good carcass weight. They have a deep wool cap but clean face. Micron is 21-30

Summary of alpacas with Columbia type characteristics;

- The Columbia is what I would say best describes the average alpacas in the world production. They are extremely hardy and most versatile for multi-climatic conditions. They range in size but are generally larger than smaller superfine fleece producing alpacas. It is a fleece type seen in most of the colored alpacas with an average micron in first year of 19 to mid 20's. As the alpaca matures the micron gets stronger, 25 to 35, depending on environment and diet. They are well structured and balanced in body. Fleece type is similar in character to the vicu a, with little to no bundling or lock formation. The crimp has a higher than average frequency. It is a perfect dual purpose alpaca. Many breeders select this type for its correct and strong conformational qualities with dense wool coverage as well as for medium to fine wool production.
- Micron ranges from 19 in first years to 28t- at maturity; average is 25 micron at maturity.


There are many other breeds and cross breeds of sheep that create some interesting variables within these fleece types just as in alpacas. For reference, the following main sheep breeds are ones we find that best describe what we are seeing in the development of alpaca fleece types.

The only alpaca that does not fall into one of these resembled sheep breeds is the "Incan Alpaca". These alpaca types are very unique compared to any of these sheep breed types described above. They are closer to the Cashmere goat, Camel, Musk Ox and Tibetan Antelope in fiber type than they are to any sheep breed. Vicu a type fiber has a very high frequency of crimp which is so concentrated and dense that you can barely recognize crimp at all. The fiber is so fine that one can easily make the mistake of thinking there is not much density at all. Historic studies have shown the vicu a to be the densest of all fiber bearing animals. The primary fibers are as fine as 16 microns with a 0.5 percent over 30 and secondary fibers as fine as 5 microns with an overall average of 13 microns.


Most of the progress in advancing the alpaca breed have been focused on the "progressive alpaca" type. The Incan alpaca has been set aside and considered a more primitive type. We are certain that this Incan alpaca, which provided South America a history of Royal fiber unequaled to any produced today, is not to be overlooked. There is a specialized effort underway which involves both South American farmers and experts from many fields to resurrect the breed of Incan Alpaca in South America. They hope to restore the volume of royal fiber they once produced. Our breeding program also employs a strong goal of reproducing this fiber type.

## Vicu a Type referenced here as Incan Alpaca:

This is the finest fiber alpacas can possess ranging from 13 to 18 micron. They have a very high frequency and low amplitude of crimp. The ultra fine fibers are tightly packed to the skin and feel as soft as Cashmere, exhibiting an incredible brightness or sheen. Many have shorter staple length, however with increased breeding selection we have seen 4 to 6 inches in length in this type of fleece. This is the finest type fleece you can find in colored alpacas that will maintain fineness with less than 20 micron range into full maturity. They are not as simple as vicu a crossed with an alpaca or first generation paco–vicu a, as seen below (top right).

The true Incan Alpaca, like the Pre-Columbian Alpaca, are more highly advanced than these first vicu a crosses. They involve much more time and breeding selection.

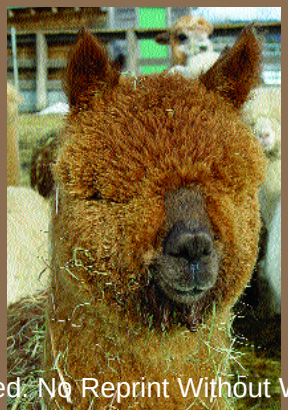
Summary of alpacas with Incan Alpaca fleece type characteristics;

- These alpacas, like the paca vicu a, are typically smaller in frame and have velvet like fine short stapled fleece of two to six inches. You can tell with one touch that the fiber is well below 20 microns. They have an extremely high frequency of crimp that is hardly visible to the eye. The finest colored fleeces have this kind of crimp and we believe they most closely resemble the pre-Columbian Incan Alpaca. Many do not have as much extension of fiber uniformity and may produce shorter, finer fleeces that cut a smaller fleece weight. With selective breeding we have improved fleece length and uniformity without sacrifice to fineness and vicu a characteristics. We think the advantages the true Incan Alpaca possessed are similar to the advancements we are making with this type of fleece. These alpacas are extremely hardy and independent. Most fleeces are fawn to darker colors, with white as well.
- Micron ranges from 13 to 15 in first years and 19t- at advanced maturity; average is 18 at maturity.

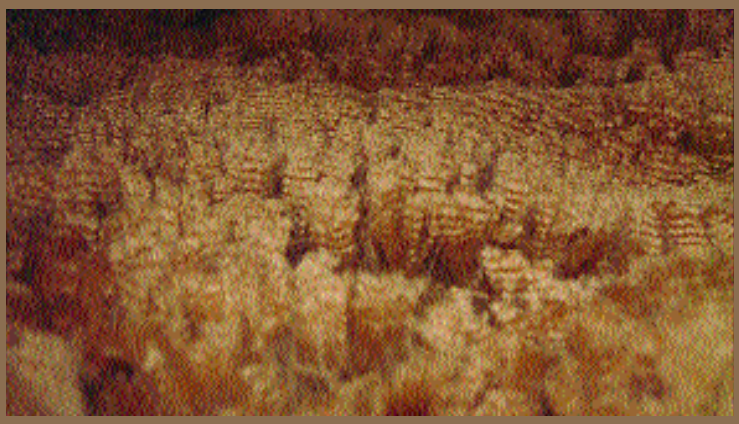











Snowmass Alpacas is striving to further our knowledge to better understand fleece quality with what ever sciences and fiber assessment technologies are available.

We recently took advantage of a particular skin testing analysis for Secondary/Primary (S/P) fiber ratios and Follicular Density testing, through 8 mm skin biopsies taken at the midside prime fleece area. This is sent to Australia and tested by Dr Jim Watts SRS Company Pty. Ltd. We sent skin biopsies from a select group of older and breeding age male alpacas and one 11 year old female vicu a alpaca who's micron is still 16. These were not easy and or inexpensive to perform so we limited our test group considerably.

Our main interest in doing these tests was to measure respective follicle densities within a cross section of our test subjects as well as to obtain greater insight on the variable types of fleece structure (such as crimp and architecture, and the relationship to follicle density and fineness). The directive is to breed for the highest number of fine secondary and fewer and finer primary follicle ratios. These studies have been well proven within the SRS ® Merino sheep breed, however, we feel the studies are in more preliminary stages with alpaca.

Our results have just come back and we hope to share the information in the near future. The Incan Alpaca types we biopsied (which were all colored) tested as high as our best whites with completely different fleece types. The most interesting report was one of our highest test results was from a medium brown Stud at a record S/P ratio of 13.7.

We do see this testing system bringing in valued information to alpaca breeders as another tool to help in developing the most advanced fleeces possible. This test provides the best understanding of true density, however it is not easy or economical to perform on a herd basis and is just one of many tools that are needed to truly evaluate the quality of breeding alpaca fleece.

We still have to rely on other testing systems including our own hands and eyes to best evaluate fineness, staple length, scale height (brightness) uniformity etc.

Crimp style is something that will find its place according to all the above. We emphasis that we believe that all crimp styles are valuable and as long as we breed for the universal textile interests we will find all our fleece types evolving further and further into the Elite textile world.

# Breeding Selection

Snowmass Llamas and Alpacas began in 1983 and became solely Snowmass Alpacas in 1989. Our herd has been in a continual evolution for all these years. We have devoted ourselves in these years to pursue creating one of the finest breeding herds of alpacas in the World.

Our breeding criteria is based upon the following individual elements in order of importance. All these attributes are there to make a 100% true selection.

- Soundness of body and limb (conformational balance and form and function)
- Fineness of blanket fleece and extremities from the wool cap, neck, and into the leg. Low average micron (ideally midside below 20 in the 1st year and 2nd years, and low 20's for following years. Grid Samples ideally below 20 in the first year and low 20's into maturity.) tested by blanket and grid samples. We are more interested in histogram readings from samples cut directly from the end closest to the skin (butt cut) where it is less affected by weather and environment. This gives you a better understanding of the true genetic potential of the alpaca being tested.
- Uniformity and extension of blanket fiber through brisket, shoulder, hip, head, neck, and leg. (greater secondary follicle ratios showing evolution to more true wool fibers into extremities)
- Lack of medulation (greater secondary follicle ratios and low percentage over 30 microns)
- Luster or brightness (handle and scale height)
- Staple length (minimum of 3 inches a year preferably 4 to 6 inches)
- Volume (the more finer fiber the better; measured by follicle measurements with greater secondary to primary follicle ratios as well as by weight)
- Crimp and character (There are a wide range of crimp styles and we tend to like and breed for them all. Each will represent various textile advantages and as long as the above attributes are present, we are not preferential to any specific type)

We find that the finest colored fiber is 14 to 18 microns. That which stays under 18 is what we refer to as Incan Alpaca. We have dedicated much of our breeding program to extending uniformity and increasing staple length to this type of fibered alpaca.

We have also bred some exciting Merino type fleeces that are in the same low micron range as the vicuña type. These are 14 to 18 micron which maintain an under 20 micron fineness into maturity. These also have an advanced extension of fine fiber throughout the blankets and into the extremities. They are bred very carefully to enhance vigor and strong body frame.

We have also bred for the Corriedale, Romney, and Lincoln type fleeces that have more dramatic amplitude of crimp and typically longer staple length. Currently we are breeding to have these fleece types finer and brighter and have had great success.

North American alpaca breeders are just stepping into the greatest advancements in alpaca breeding and we have many exciting years of breeding ahead. We wish to end this story of our breeding efforts and reflections with inspiration and enthusiasm for all of us as we work together towards giving the United States an International reputation for having the finest concentration of alpacas in the world.

### Don & Julie Skinner - Snowmass Alpacas

The following pages list, in brief summary, the Private Reserve breeding studs in use with Snowmass Alpacas and North American Alpaca Stud by order of Vicuña type and then by color. More specific information will be available on our Web site.

**www.snowmassalpacas.com**

# Alpaca Gestation

(average 335 days)

| Approx. Date Bred | Due date |
|---|---|
| Jan 1 | Dec 2 |
| Jan 7 | Dec 7 |
| Jan 11 | Dec 12 |
| Jan 16 | Dec 17 |
| Jan 21 | Dec 22 |
| Jan 26 | Dec 27 |
| Jan 31 | Jan 1 |
| Feb 5 | Jan 6 |
| Feb 10 | Jan 11 |
| Feb 15 | Jan 16 |
| Feb 20 | Jan 21 |
| Feb 25 | Jan 26 |
| Mar 2 | Jan 31 |
| Mar 7 | Feb 5 |
| Mar 12 | Feb 10 |
| Mar 17 | Feb 15 |
| Mar 22 | Feb 20 |
| Mar 27 | Feb 25 |
| Apr 1 | Mar 2 |
| Apr 6 | Mar 7 |
| Apr 11 | Mar 12 |
| Apr 16 | Mar 17 |
| Apr 21 | Mar 22 |
| Apr 26 | Mar 27 |
| May 1 | Apr 1 |
| May 8 | Apr 6 |
| May 11 | Apr 11 |
| May 16 | Apr 16 |
| May 21 | Apr 21 |
| May 26 | Apr 26 |
| May 31 | May 1 |
| June 5 | May 11 |
| June 15 | May 16 |
| June 20 | May 21 |
| June 25 | May 26 |
| June 30 | May 31 |

| Approx. Date Bred | Due Date |
|---|---|
| July 5 | June 5 |
| July 10 | June 10 |
| July 15 | June 15 |
| July 20 | June 20 |
| July 25 | June 25 |
| July 30 | June 30 |
| Aug 4 | July 5 |
| Aug 9 | July 10 |
| Aug 14 | July 15 |
| Aug 19 | July 20 |
| Aug 24 | July 25 |
| Aug 29 | July 30 |
| Sept 3 | Aug 4 |
| Sept 8 | Aug 9 |
| Sept 13 | Aug 14 |
| Sept 18 | Aug 19 |
| Sept 23 | Aug 24 |
| Sept 28 | Aug 29 |
| Oct 3 | Sept 3 |
| Oct 8 | Sept 8 |
| Oct 13 | Sept 13 |
| Oct 18 | Sept 18 |
| Oct 23 | Sept 23 |
| Oct 28 | Sept 28 |
| Nov 2 | Oct 3 |
| Nov 7 | Oct 8 |
| Nov 12 | Oct 13 |
| Nov 17 | Oct 16 |
| Nov 22 | Oct 23 |
| Nov 27 | Oct 28 |
| Dec 2 | Nov 3 |
| Dec 7 | Nov 8 |
| Dec 12 | Nov 13 |
| Dec 17 | Nov 18 |
| Dec 22 | Nov 23 |
| Dec 27 | Nov 28 |

Your most important investment is a stud which can produce the type of alpaca that will take you to the show ring as well to the finest elite fiber sort. We guarantee these elite males have the genetics to do this very thing for prices that are most competitive.

Breeding for Elite Color is the next challenge. Snowmass has been working as hard to get a consistent group of alpaca that range in solid natural colors that are genetically strong in their color and carry an elite a fleece as our whites. The Kings of Color are found in our Elite Breeding pages. These studs have created the next generation of Elite Color genetics. We are proud to be able to offer some of these genetics from our breeding program.

A strong breeding program branches itself into many excellent genetics while building reliable and consistent pedigreed alpacas. We have kept these fine young males until they reached maturity to infuse their genetics into our herd. Some we have bred and others are too closely related to the females we are now breeding. All are sold with full reproductive guarantees. Many have shown and all come from proven elite champion sires as well as truly superior dams. These males are loaded with the best genetics our breeding program has to offer. Prices are listed and open for negotiation.

THE MOST IMPORTANT ASPECT OF PROTECTING YOUR INVESTMENT
COMES FROM INFUSION OF PROVEN ELITE GENETICS.
DON'T GAMBLE ON ANYTHING BUT THE VERY BEST