



# LLAMA FIBER



International Lama Registry  
Educational Brochure #9

Llamas (and alpacas) have a long history with humans. They are a man-made breed having been selectively bred from guanacos by the native South American peoples at least 5000 years ago. Their original purpose was to provide work as a pack animal, meat, and fiber to make their packs, ropes and clothes for the common folk. (Alpaca fiber was reserved for royalty.) Even the dung was utilized as fuel for fires in their treeless land. Recent research has shown that the fiber from both animals was far finer 1000 years ago than it is today. Llamas used to have fiber that rivaled alpaca and recent history has seen North American llama breeders unknowingly working back towards that standard.

The story of llama fiber in North America is an interesting one. The current enthusiasm for llamas in general began in the late 1970s. At that time, most llamas were large with a pack-style frame and a short-wool double coat. A double coat is very practical for a packer. The coarse outer guard hair helps tremendously to shed rain and debris. The downy undercoat molts annually leaving the llama light fibered for the warm summer months with enough re-growth for winter comfort.

In the early 80s, woollier llamas became fashionable and a premium was placed on breeding for longer wool over more of the body. As the trend continued, guard hair was bred down to a fineness that was similar to the woolly undercoat. (The coat was homogenized.) Just like sheep, the ability to shed was lost at this time and these llamas need to be shorn. Currently, the trend is for llamas with very straight, long fibers that fall in distinct locks that curl into ringlets.

Each of these three basic wool types has its own strengths and weaknesses. People wanting to use llama fiber need to decide how they want to use it before they can decide which type is best for them. People uninterested in fiber usage should consider the maintenance needs of each before choosing which to own. It is important to note that llamas do not all fall neatly into one category or another. There is a continuum of possibilities from light wool on the body only to very heavy wool with maximum coverage and every possible degree of guard hair.

We'll take a look at each type in more detail, but first some general llama fiber characteristics and a quick lesson on terminology. While commonly referred to as 'wool,' the undercoat of a llama is technically a hair owing to its cellular structure. The Federal Trade Commission, Bureau of Consumer Protection states, in their publication on labeling law, that the

term 'wool' may be used for the fleece of the sheep or lamb, the hair of the Angora goat, Cashmere goat, camel, alpaca, llama or vicuna, although they may also be identified by their specialty fiber names: mohair, Cashmere, camel, alpaca, llama, and vicuna. If the name of a specialty fiber is used, the percentage of that fiber must appear on the label. To further confuse the issue, the South American textile industry does not label their fiber according to the animal it came from but according to its quality. Fine, uniform fiber is labeled as 'alpaca' even though it may have come from a llama. Coarser fiber, especially fleeces that include guard hair, is labeled as 'llama' even if it came from an alpaca. This accounts in part for the reason llama wool is so commonly perceived as a hairy, unpleasant fiber. In truth, many of the llamas here in North America could be considered to be growing alpaca! Often, llama breeders use the very generic term 'fiber' to circumvent the confusion.

Llama wool has a somewhat hollow core, a feature that decreases and becomes nonexistent in very fine fibered llamas. Llama wool is touted as being seven times warmer than sheep's wool and more durable though there appear to be no scientific studies to prove the claim. Personal experience does confirm its superiority. Llama fiber contains no heavy lanolin, only a little natural oil, so the harvested weight will be close to the finished weight. A small amount will be lost when the oil, dried sweat and dirt are washed out and debris removed. (It's far better to blow/brush your llama to remove debris before harvesting than to tediously pick it out afterwards!) The wide range of natural colors surpasses that of any other fiber producing animal with the exception of the llamas equally colorful alpaca cousins.

Llama is a fine fiber as compared to other wools. Even the coarsest llamas have wool finer than many sheep. High quality llama wool measures just 15-22 microns in diameter, which compares very favorably to merino sheep wool at 12-20 microns. (A micron is 1/1000 of a millimeter or 1/25,000 of an inch.) However, it is wise to keep in mind that a better indicator of how soft a fleece will feel is its uniformity. This is where those coarse guard hairs and the variation in quality from one part of the body to another really come into play. Uniformity over the body and over the lifetime is a worthwhile breeding goal for those interested in fiber producing llamas. Guard hair can measure 40 microns; anything over 30 microns is apt to prickle and itch against our skin. Just as our hair changes as we mature, so will our llamas fiber lose its baby fineness. In addition, breeding places a strain on a female's fiber as her

system diverts resources to her cria and testosterone will coarsen an intact male's wool. Density is a further consideration and refers to the number of fibers grown per square inch of skin. Along with rate of growth, density is a key determiner of yield.

### **LIGHT WOOL, PACK STYLE LLAMAS**

These llamas are certainly the lowest maintenance of all. They also have an undeserved reputation for having poor quality fiber. I disagree. Most light woolled llamas have a soft downy undercoat with lots of crimp. It makes a great knitting yarn where lightness, loft and elasticity are desired. There is likely to be little to no luster. The drawback is the guard hair. If the llama is shorn, all of the guard hair is harvested along with the undercoat. If left in the fleece, it will cause the yarn to be quite prickly and uninviting. For this reason, harvesting the wool by brushing the llama when molting is preferable. The guard hair does not molt so only a little will be collected, much like the hair we find in our own hairbrushes. Brushing also serves to harvest the full length of wool the llama grows. The llama will provide the break in the wool, you need merely remove it from their body. If you shear, the chances of your clippers cutting at the same point as the natural break are very small. The result can be very short, unusable fiber. The final argument in favor of brushing out the undercoat is the thrill of seeing your llama standing in the sunshine on a windy day with its lustrous guard hair blowing in the breeze.

### **HEAVY WOOL LLAMAS**

Heavy wool llamas typically do not molt well. There may or may not be some shedding in particular on the neck, upper legs and shoulders. Guard hair can be anywhere from very prevalent and coarse to so soft and fine as to be virtually nonexistent, requiring magnification to distinguish it. Crimp and fineness of the wool is equally variable and some llamas may have a light, mellow glow to their wool. Use of this wool will vary with the specific characteristics. It may make a fine knitting yarn for light, lofty items or be better reserved for items where drape is a more important consideration, or be reserved for weaving. Harvesting will need to be accomplished by shearing. If guard hair needs to be removed to suit the intended purpose, it can be accomplished without too much difficulty, especially if the fleece can be kept at least somewhat intact during shearing and handling.

### **SILKY/SURI LLAMAS**

Silky/Suri fiber llamas are the most recent type to appear on the scene. The fiber is more hair-like, straighter and more lustrous than that of woolled llamas. The suri style hangs in distinct locks that curl into soft ringlets while silkys lack the distinctive lock architecture. The fiber ranges from quite coarse to extremely soft and fine. Like suri alpaca, it is best suited for weaving or lace knitting of lightweight items where drape is an asset and elasticity is unnecessary.

### **HARVESTING AND PREPARATION FOR USE**

As previously noted, some llamas are better shorn and some are better brushed and all give a better harvest if they are cleaned of straw, hay and leaves before any attempt is made to collect useable wool. Cleaning can be done by brushing (lightly if you llama is shedding) with any number of types of brushes or blowing with a high quality blower or even a leaf blower. Take care not to knot the fiber as you blow and direct the dirt away from all eyes, including your llamas. It is not necessary to give your llama a bath prior to the harvest. The fleece can be easily washed or you can wait until after the yarn is spun or even until the final item is completed.

Shearing can be done in a variety of styles using a variety of tools. The simplest is to use a pair of scissors. Fiskars® makes a style that is widely appreciated. They have a soft, comfortable handle and are spring loaded to open automatically. They seem to have overtaken traditional hand shears with their sharp points as the hand tool of choice. Dog clippers have recently begun to be used. Professional electric wool shears are the top of the line choice but come at a much greater cost.

At first, most llamas were shorn only around their barrel. It was our initial response to the heat stress problems our woollier llamas exhibited. Today we frequently see more complete clips that harvest a much larger portion of the useable wool on the llama and provide greater comfort in hot weather. Some llamas are now shorn from the top of their necks all the way down their legs as far as the long fiber grows. The body wool on your llama will likely grow 3-4 inches per year, more if he or she has the right genetics. Growth on other parts of the body will be slower. You may choose to shear the body every year but the neck and legs only every other year. Your annual harvest can be as little as under a pound from a low-density llama given a barrel cut to

five or more pounds from a full body shear on densely fibered llama.

No matter what method or style you choose, you'll be delighted at how much cleaner your llama will stay after being shorn and how much happier he is in hot weather.

When you are ready to begin shearing, choose an area with a clean floor as it is inevitable that some wool will fall to the ground. Pick it up as soon as possible. As you shear, try not to cut the same area more than once. Once you have clipped the entire area intended and bagged the wool, you can go back and trim up any uneven areas. Do not put these short fibers, called second cuts, in with your longer wool. If they are at least an inch long, you can save them for felting if you wish. Coarse fiber from under the belly and down the legs should be kept separate from the prime blanket fiber. Sorting your fiber in this way as you go will eliminate the need for skirting as you've already done it. Your local bird population will happily receive your unwanted bits for use in nest building. It can also be used to mulch your garden or for insulation or padding.

If you choose to skirt your fleece at a later time, a simple table with a hardware cloth top makes a great surface to work on. Lay the fleece cut side down on the table. Dirt and second cuts will fall through the holes with a gentle shake. Work your way around the edges of the fleece removing any areas that are noticeably coarser than the bulk of the fleece. You will also notice any guard hair protruding from each lock as it will be longer than the wool. Grasp the tips of the hair, support the lock with your other hand and pull the hair out. It can be kept for use in making ropes, doll hair or fishing flies if desired. You now have a fleece that's ready for further processing.

Some commercial mills require the wool to be washed before carding, you may choose to do so to lower the amount of dust in the air as you work. Because there is no lanolin in llama wool, washing is very easy. Load your fleece into mesh bags. Don't overfill the bags, you want the water to flow through easily. Fill your sink, washing machine or a tub in the yard with comfortably hot water and a big dollop of soap. Hand dishwashing detergent is fine, some use shampoo and other people prefer expensive wool washes. Submerge your bags in the water and let them soak for at least 20 minutes. Remove the bags and let them drain while you dump out the dirty water and refill with water of the same temperature. If you have used your washing machine, you can use

the spin cycle to remove the excess water from the wool. Don't let the machine agitate! Excessive handling, even in your sink, can cause your fiber to felt and be ruined. After at least two rinses, a spin in your washing machine will dramatically shorten drying time. Remove the wool from the bags and lay it out to dry on an old bed sheet, towels or a non-rusting drying frame. Please note that this wash is unlikely to leave your wool pristinely clean, but you'll be washing it again later anyway.

The next step is to prepare the wool for spinning by carding or combing. Carding is more common and can be done at home with hand cards or a drum carder that forms small batts. Commercial mills can card the wool into large quilt sized batts or form it into a long soft rope called roving. Yarn spun from carded wool is airier and lighter than the worsted type yarn spun from combed fibers. Combing is the method of choice if you want a fine, firm yarn with no elasticity. Few mills offer wool combing but many comb styles are available for home use.

If the llama wool is to be mixed with another fiber, or even with another fleece of the same or a different color, it should be done during carding or combing. Whether or not to blend llama with another fiber depends upon the final use of the yarn. Adding a fine, crimpy sheep or lamb's wool will add loft and elasticity. Silk or kid mohair will add luster and strength. Angora will impart a soft, fuzzy halo. Usually, 20-30% of the blending fiber is enough to produce these effects. Whatever you choose to do, the variety of natural llama colors offer endless possibilities. They look good together no matter which ones you choose. However, if you want a color that llamas don't provide naturally, know that llama wool dyes beautifully. Anything from Kool-Aid® to commercial wool dyes may be used. If you use drink mix, be sure to buy the packets that do not have sugar already added. If that's not your style, you can buy ready mixed wool dyes that contain everything you need but the water. Landscape, Gaywool and Country Classics™ are three good brands. Commercial wool dyes will require additional salts and acids but are more economical if you will be dyeing in quantity.

Your involvement with your llama's fiber can range from selling it to a hand-spinner who will cherish it, to sending your fleeces off to a willing artist to be returned as a fabulous sweater, all the way to becoming your own artist/craftsman. Whatever you do, don't let your llama's luxury produce go to waste. Let your imagination and creative drive be your guide. The possibilities are endless!



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