

# INDUSTRIALIZATION AND COMMERCIALISATION OF THE FIBRE OF SOUTH AMERICAN CAMELIDS IN ARGENTINA

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## ABSTRACT

*The objective of this work is to analyze the available information on fibre of South American Camelids in Argentina, to provide objective data to the design of development production policies. It is quite clear that: i) Vicuña and Guanaco are mixed for their industrialization and commercialization (“Vicuna”); ii) Llama fibre is utilized under other denominations; and iii) the three are used in the production of garments of traditional design and extremely high value. The available information seems to indicate that Vicuña, Guanaco and Superfine Lama are also mixed with Cashmere, Baby Alpaca, Superfine and Ultrafine Merino. Dehairing is the textile process that increase productivity and facilitate spinning and improve the useful life of the garment as high quality consumer want to use. This actual scenery is highly negative, since it facilitates export of these fibres at a price well under their real market value, unless done what has been recommended.*

Key words: Vicuna, Vicuña, Guanaco, Llama.

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## 1.- INTRODUCTION

The South American Camelids in Argentina are represented by Guanaco, Vicuña (wilds) and Llama (domestic) (FAO, 2005). The information gathered allows detecting that this species are complementary and that it is advisable to promote their rearing at the same time. The development of these economical activities allows a substantial improvement of the living conditions (less favoured

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areas) of the inhabitants of the native regions of this species. Since they are adapted to the habitat and the habitat to them, they allow mitigating and reversing the desertification process generated by the introduction of sheep and goats in regions to which they are not adapted. Their profitability makes them equally advisable for small, medium and large farmers. The ever increasing international demand for textiles made out of these materials assures that a constant increase in fibre production will not affect their commercial value. Since Argentina practically has no Alpacas (FAO, 2005), it did not refer here to this species more than when it is required by the analysis.

The objective of this work was to analyse the available documentation of industrialization and commercialization on fibre of Vicuña, Guanaco and Llama in Argentina, aims to provide objective data to the design of policies oriented to the development and/or facilitate of their production.

## 2.- VALORISATION OF TEXTILE FIBRES

The value of a textile fibre is given fundamentally by its average diameter (fineness). Other minor attributes that contribute are: *i*) the Prickle Factor (percentage of fibres of more than 30  $\mu$ ) (Naylor & Phillips, 1995; Frank et al. 2014); *ii*) the presence or absence of medulation; *iii*) the crimp (fibre curvature); *iv*) the form and height of the fibre scales; *v*) the fibre length; *vi*) certain particular characteristics as “creaminess” (Mack Swinburn et al., 1995) and natural colour; *vii*) the scouring yield; *viii*) the dehairing yield in double coated species; and *ix*) their identification with a life style. These attributes are complemented by the diffusion and image the industrialist or merchant gives them (marketing). Vicuña, Guanaco and Llama fibres stand out from other textile materials by the level of excellence they occupy in all these properties. In the film “Match point” Woody Allen (2006), its director and scriptwriter, uses Vicuña to exemplify this situation in a masterly way technique. Guanaco and Llama fibres have never been exposed to the marketing (Adot et al., 2008).

It is estimated that of the total amount of alpaca produced in Peru, 45% is presently of coarse quality ( $>31\mu$ ), 35% is superfine (24,5 to 26  $\mu$ ) and 20% is baby Alpaca (20 to 22,5  $\mu$ ) (Wool Record, 2005). This is a particularly promising situation for the fibre of argentine Llama, because, the quality of Llama fibre is defined with good precision. The average fibre fineness distribution of the Llama populations from NW of the Country is objectively well know. If this results are representative of the rest of the population, 42% of Argentine Llama fibre is Fine (21,9-24,9  $\mu$ ), thus comparing favourably with Cape Kid Mohair (25-28  $\mu$ ). 28% is Superfine ( $<21,9 \mu$  (Frank, 1999; Hick et al., 2009)), its value tending to that of Cashmere (Chinas Cashmere has a fineness of 13,5 to 16  $\mu$ , while Iranian and Afghan Cashmere is 1 to 2  $\mu$  stronger (Phan et al. 1995). Medium fibre (25-29,9  $\mu$ ) represents 27% of production, deserving at least the price of Kid Mohair (25-28  $\mu$ ) adjusted by the difference in scouring and dehairing yield. Only 3% of the fibre is Strong ( $>30 \mu$ ), competing with advantage with the best carpet fibres. For the 25 and 28  $\mu$  Cape Kid Mohair top, the Wool Record (2006) quotes, respectively, US\$48 and US\$35/Kg. As the fineness diminishes, the price of Llama fibre should tend towards that of the Chinese Cashmere, adjusted by the differences in dehairing yield and length of fibre. For white dehaired Chinese Cashmere, 38 and 32 mm long, international markets quote US\$99 y US\$89/Kg respectively (Wool Record, 2006). The yield and length of dehaired Llama is considerably higher than that of Cashmere, thus deserving a superior relative value: almost 60% dehairing yield and a fibre length of 60-70mm, compared with a yield of around 35% and a length of 30-40mm. If we classify Superfine Llama we will find that around 20% has a fineness of less than 19  $\mu$  (Ultrafine Llama).

Even if it doesn't know with certainty the average fineness of Vicuña and Guanaco fibre, it's know that they are considered the most fine and precious of the textile market; the famous Chinese Cashmere deserving a considerably lower value.

The Prickle Factor of Vicuña, Guanaco and Superfine Llama, once dehaired, allows their use against the skin without itching. This is one of the properties more appreciated by the textile market. Because they are medullated, they are light and thermal. Their low crimping and non prominent scale structure gives them a particular silkiness. The average length of Vicuña and Guanaco makes them apt for spinning in the woollen system. Classifying them, a percentage of fibre of appropriate length

for spinning in the worsted system was obtained. The length of Llama fibre allows spinning by both systems. Vicuña and Guanaco possess a characteristic and highly appreciated colour (“Vicuna colour”). The colour of Llama fibre goes from white to dark black, passing through all the range of greys, and from light brown (“Vicuna colour”) to dark brown, passing through all intermediate tones of brown. They possess an agreeable “creaminess” touch when handled, however this property has not yet been studied. In all cases, the scouring yield surpasses 90%. Regarding dehairing yield, Vicuña and Guanaco fleeces surpass 50% and Llama 60% (Adot et al., 2008).

### **3.- QUALITY AND LABELLING**

Bibliographic references on the industrialisation and commercialisation of these fibres are particularly scarce. In 1811, the English agent William Walton published a descriptive account of the Four Species of Peruvian Camelids. When the author describes the quality and commercial value of Vicuña fibre, he asserts that the fibre of this animal, is the softest, finest, most silky, and when well picked (dehaired), it is, may add, the most valuable in the world. When he refers to Guanaco, Walton (1811) does not have the same accurate information. He asserts that the coat of the Guanaco is a combination of wool and hair, but from his greater exposure, it is more shaggy than that of the Llamas, though of the same length, and from being a coarser animal than the Vicuña, the under coat is neither so fine, so abundant, nor so little mixed with hair. Speaking of the Huanaco’s fleece, Garcilaso uses the words, “corta y áspera” (short and harsh) (Walton, 1811). Garcilaso’s mention may explain such inaccurate affirmation. It is not from direct observation that the descendant of the Incas (Garcilaso Inca de la Vega) has only a saying on these themes. This author left Perú at a young age and never to return. He lived most of his life in Spain and wrote his chronicle during his latter years on the basis of memories and narratives of third parties. Walton (1811), describes also how part of the Vicuña fibre was packed together with Guanaco fibre. Further on the author provides a new indication of the common destiny of these two fibres as a repeated fraud, of mixing the best Guanaco fibre, with that of the Vicuña, to increase the quantity (which was possible from a resemblance of colour), made it of late years necessary, for the Indian hunter, to deliver in the unshorn skin, to the purchaser (Walton, 1811). It is known that is the quality, and not only the colour of Guanaco, that allows these fibres to be mixed, and that the aborigine is not responsible for this practice. Later on Walton rectifies himself, the merchants are now the ones responsible for packing them together with the addition of Llama fibre, in a non transparent way that it is understood is maintained up to present. Once again, the author seems to ignore that it is the quality of Guanaco fibre that allows the adulteration of Vicuña (Walton, 1811). Contrarily, his evaluation of Llama fibre is more appropriate, when he appreciates that his fleece is not esteemed so valuable; but there are spots on the back, and rump, where fibre might be picked, that would rival that of the Vicuña (Walton, 1811). It is understood that Walton (1811) refers to the actually Superfine and Ultrafine Llama fibres (Adot et al., 2008).

A more recent, and technically more authorised publication, allows to continue unravelling the history of these fabulous fibres. The National Association of Scottish Woollen Manufacturers (NASWM) has a profound knowledge of the South American Camelids fibres, since among its members can be found some of the principal historical consumers. This Association published in 1956 a book in which they recompile a series of articles written from 1931 to 1956. Vicuña is described as the ‘wool’ is the finest that exists the outstanding glory of the ‘wool’ is its incomparable touch-possibly equalled by some of the softer furs and by the delicious feeling of a small kitten, but otherwise by no means to be imitated. Certainly weight for weight is the warmest clothing of all the ‘wools’. (NASWM, 1956). Guanaco fibre is also evaluated, in its just context, as the even rarer but much less valuable ‘wool’ of its relative the Guanaco at its best is nearer than anything else; fine Chinese Cashmere is a good second (NASWM, 1956). Guanaco is considered of inferior quality than Vicuña, but superior to Chinese Cashmere. The unscrupulous way the commercialisation is managed is well described in the following paragraph: “The word [Vicuna] itself has become, like many other words, deflected by trade use-or truly by trade abuse-so far from its proper and immediate meaning

that without the adjectives “pure” or “real” it means something quite different from what it should” (NASWM, 1956). The NASWM (1956) report, mentions Llama and Alpaca fibre as the Alpaca is only a little smaller and for general purposes its fibre can hardly be distinguished from that of the Llama; in fact, the finest of the Llama is finer than the coarsest of the Alpaca.

Von Bergen (1954) in her classic book, unfortunately describes Guanaco as the hair is a mixed type containing approximately 10 per cent beard hair. Fineness measurements made on guanaco fibres place it between the alpaca and vicuña averages vary from 18 to 24 microns. The commercial available product which is cut from Argentine pelts and then blown averages 19 microns with fibre dispersion from 5 to 60 microns. The fibre diameter (fineness) determination show an average fineness quite lower (Chulengos/Kids: 15,25  $\mu$  ; Adults: 17  $\mu$ ). The dehairing yield is considerably lower (around 50%). For Vicuña, von Bergen (1954) gives that the average weight of a vicuña fleece is 1 lb (0.454 Kg), consisting of the cinnamon colour as well as the white belly part. These two colours are present in a ratio of approximately 1 to 1, and both colours have the same degree of fineness. For the cinnamon colour is deduced that only speaks of Peruvian vicuña. For scoured and carded Vicuña it gives a fineness of 13,2  $\mu$ . Von Bergen (1954), as well as Walton (1811) and the NASWM (1956), describes a commercial behaviour that tends to identify Guanaco as Vicuña. The fibres of the Guanaco have only recently been introduced by the woollen industry as one of the luxury fibres. There has been confusion about the proper name of this peltry because certain concerns in the trade have adopted the name ‘vicuña’ for it. Also describe Llama fibre as the hair closely resembles that of the alpaca, with a mixture of fine hairs and kemp. For this species he gives two average fineness: 27,0  $\mu$  for a mixture of different types of greasy Llama (“Raw Mixed”), and 20,1  $\mu$  for scoured Baby Llama. Von Bergen compares Alpaca with Llama fibre, report that his hair differs from that of the llama in having no coarse or brittle fibres, which are common in the fleece of the llama. He provides two average fineness for Alpaca: 26,7  $\mu$  for “scoured piebald” animals and 27,3  $\mu$  for “various tops”. The author does not seem to consider Alpaca finer than Llama, as is the market common perception. When the authors mentioned write about Alpaca they seem to refer exclusively to Baby Alpaca that does not possess a pronounced double coated fleece (Adot et al., 2008).

The following findings can be extracted from here: in Europe, since the beginning of the Industrial Revolution, Vicuña has been commercially considered as the most valuable textile material, while Guanaco remains unknown, even if exported together and, everything indicates, bought by the same industrial firms. Llama fibre, as in the case of Guanaco, is also unknown by the consumer, even after being exported to Europe since the beginning of the XIX century. It can be deduced that in practice: *i*) Vicuña and Guanaco are being mixed for their industrialization and commercialisation under the denomination “Vicuna” (its only recently that textiles started to appear in the market identified as “100% Guanaco”); *ii*) Llama fibre is utilized under other denominations (Vicuna, Cashmere, Alpaca; mohair); and *iii*) the three fibres are used in the production of garments of traditional design and extremely high commercial value.

Garments manufactured with these fibres are characterized by a design that has remained unaltered through time. All efforts to modify this characteristic may have negative consequences on the value the market assigns to the fibre. It is evident that marketing techniques were never applied to Guanaco and Llama (Adot et al., 2008).

#### **4.- MIXTURES WITH OTHER FIBRES**

Walton (1811), von Bergen (1954) and the NASWM (1956) report throw light on the historical mixtures made between Vicuña, Guanaco and Superfine Llama, as well as the deficiencies in labelling to which they were exposed. The mixtures to which precious fibres are exposed are described for the case of Cashmere, as that as more than 60% of the garments checked at DWI (Germany) were seriously miss-labelled with regard to their cashmere content. They had cashmere deficiencies of at least 10% or frequently no cashmere at all. In most cases, cashmere is adulterated with fine sheep’s wool. But yak, Angora rabbit hair, camel hair, and fine alpaca are used as substitute

as well (Phan et al., 1995). The fine Alpaca mentioned could well be Superfine or Ultrafine Llama. Everything indicates that this same situation applies to Vicuña, Guanaco and Llama. It can be deducted that in practice they are blended with other fibres as Cashmere and Superfine and Ultrafine Merino. The objective of this blend would be: *i*) to diminish the cost of raw materials; *ii*) to reach an economy of scale in accordance to the needs of industry and commerce; *iii*) to improve industrial productivity and facilitate spinning in the worsted system by the addition of longer fibres; and *iv*) to improve the useful life of garments. The report of NASWN (1956), illustrates this last objective as for many purposes the lustrous and silky nature of these fibres (South American Camelids) makes slipping at the seams of a garment a marked danger. This can be overcome quite satisfactorily by blending with sheep's wool. In this sense, it's to be emphasized the contribution that the addition of Ultrafine Merino can achieve in the useful life of Vicuña-Guanaco garments. The longer length of this fibre, apart from facilitating spinning of Vicuña-Guanaco in the worsted system, improves in a significant way the useful life of the garments. It's to be deducted that in practice Vicuña, Guanaco and Superfine and Ultrafine Llama, apart from being blended among themselves, are also mixed with Cashmere and Superfine and Ultrafine Merino (Adot et al., 2008).

## 5.- COMMERCIAL VOLUMES

The international commerce of these fibres got started a long time ago: "Messrs Ronald & Rodger of Liverpool have traced transactions there to 1844" (NASWN, 1956). Walton (1811) provides information on the volume of Vicuña commercialised at the beginning of the XIX century: "... a South American, of considerable local knowledge, judging from the quantity of Vicuña wool, manufactured and exported, gave as a conjecture that 250,000 perished every year, by the hands of the hunters". If 200 grams of fibre were obtained from each animal, we would be speaking of an annual volume of 50.000 Kg of fibre. If part of the hides belonged to Guanacos, as Walton's information hints, this quantity would be considerably higher (Adot et al., 2008). The NASWM (1956) report provides the following amounts for Vicuña commerce in the United Kingdom previous to Second World War: "There is no part of the world where bootlegging is not a popular trade-but the result is that no statistics are available. One guess is as good as another-our guess is about 10,000 to 12,000 lb. (4.500 a 5.500 Kg) of raw wool in a year, yielding about 7000 to 8000 lb. (3.200 a 3.600 Kg) of yarn". The mention to bootlegging must be underlined. This clandestine traffic continues up to present times, as demonstrated by the periodic decommissions of fibre undertaken by the producing countries (Adot et al., 2008). The NASWM (1956) report doesn't provide volumes for Guanaco commerce, thus emphasizing the hypothesis that this fibre was treated as Vicuña, independently of how it was identified at its arrival in Europe. As it can be observed, the volumes commercialised were always minimum, reason why there should be no mention to an absence of critical mass as a way of justifying lower fibre prices. If Walton is correct, the fall in the volumes exported from the beginning of the XIX century to the first half of the XX century has been significant: from 50.000 Kg down to 3.200-3.600 Kg (Adot et al., 2008). It's safe to say that it's impossible to produce the quantity of yarn mentioned by the NASWM (1956) (a yield of 68%) with the volumes of fibre imported, unless the fibre had already been dehaired-we do not know if this was the case-or mixed with other fibres.

The NASWM (1956) reports provides amounts for the production and export of Alpaca and Llama fibre to the United Kingdom: "Authorities differ a good deal about the total quantity of Llama and Alpaca produced each year. Estimates vary from 4,500,000 pounds to 8,000,000 pounds (2.050.000 a 3.600.000 Kg). This variation may, in fact, be real because the beasts are usually only clipped on alternate years and various matters such as prices and weather might easily cause the total number clipped each year to vary quite a lot. Whatever the total quantity may be, we in these islands were in by far the principal users. Our imports varied round 5,000,000 lb. (2.300.000 Kg) a year, rising at times to 7,000,000 lb.(3.200.000 Kg) and falling as low as 2,000,000 lb. (900.000 Kg)". While Alpaca was made into valuable garments, Llama fibre was not detectable in any market niche (Adot et al, 2008).

## **6.- CONTRIBUTIONS TO THE KNOWLEDGE OF THE TEXTILE BEHAVIOUR OF THE LLAMA FIBRE**

With the goal to throw some light on the true behaviour of textile fibre of Llama from Argentina, there have been several studies that have yielded significant findings.

The Llama Fleece types can be defined as Double Coated and Single Coated; Lustre and Hemilustre (intermediate coated as intermediate between lustre and single coated); and Intermediate Coated (between single coated and double coated), respectively. The differentiation is carried out among the most representative types of fibres of each Fleece Type considering that the frequency of these fibre types does not influence greatly in the differentiation (Frank et al, 2007).

In a research designed to test the effect of Fleece Types on Llama fibre dehairing performance, yield, bulk and sensorial attributes, Frank et al. (2011) obtain the following results. From the point of view of textile performance, there are differences between Fleece Types. Thus, Double Coated Fleece Types have considerably less yield in dehairing, combing and carding than other Fleece Types. Lustre Types have less capacity to form volume (loose fibre bulk) than non-Lustre Types and, generally, respond less to dehairing as measured by the reduction of the coarser fibres, while in Double-Coated Fleeces this reduction was notably greater. It is also the Lustre Type the one resulting in less fibre ends protruding from the yarn, which may partially account for the diminished prickle effect.

From the point of view of the consumer, it was concluded that dehairing reduces the prickle sensation, fundamentally, in fabrics made from Double-Coated Fleeces, being this effect less notable with single-coated non-Lustre Fleeces, while with Lustre Fleeces no effect was detected. These results show that fibre classification by Fleece Type is fundamental when processing Argentine Llama fibres.

In a more recent paper fibre-based determinants of Yarn/Fabrics that can be readily used as reliable predictor variables of the differences in handle/skin comfort when comparing dehaired and non dehaired Llama fibres was to identify (Frank et al. 2014). The threshold (cut-off) variables that panellists can detect when comparing dehaired and non dehaired fibres are: overall fibre diameter (1.01  $\mu\text{m}$  within Yarn and 1.55  $\mu\text{m}$  in Fabric surface), fibre diameter coefficient of variation (5.31% only significant within Yarn); fibres greater than 30  $\mu\text{m}$  (7.66% within Yarn and Fabric surface); coarse fibre by weight (3.23% within Yarn and 4.57% in surface); coarse fibre mean diameter (3.5  $\mu\text{m}$  within Yarn and 3.2  $\mu\text{m}$  in Fabric surface). These thresholds differences are explained mainly by: the lattice medulated fibre diameter (8.20  $\mu\text{m}$  within Yarn and 6.5  $\mu\text{m}$  in Fabric surface); non medulated fibre diameter (0.67  $\mu\text{m}$  only in Fabric surface); and lattice medulated fibre frequency (1.6% only on Fabric surface).

These findings are of fundamental importance when deciding when and how much is due to dehaired a batch of Llama fibre previously classified by Fleece Types.

## **7.- COMMERCIALISATION OF THE FIBRE OF THE SOUTH AMERICAN CAMELIDS IN ARGENTINA**

In Argentina, for decades, the commercialisation of the fibre of the South American Camelids has been practically in the hands of only one buyer, acting on behalf of a small group of European industrialists specialized in the production of textiles of very high quality, prestige and price. Prices paid by the three buying groups (the exporting firm, the national industry and the artisans) generally do not reach half the price paid to the producers of Bolivia or Peru. Up to a few years ago, this same commercial firm used to buy and export almost the totality of the Vicuña and Guanaco fibre produced in Argentina. For their Llama fibre, the producers used to receive US\$0,80-1,00/Kg greasy (fleece plus pieces and bellies). In the 2003 clip, the producers organized in collecting, classification and commercialisation associations, perceived US\$3,00, US\$3,50 y US\$4,00, per Kg of Strong, Medium and Fine classified Llama fibre, respectively. Even if these prices are superior to the ones traditionally paid, they still do not correspond with the quality of this fibre (Adto et al., 2008). As a mean of comparison its interesting to review the average prices paid in December 2006 for White

Peruvian Alpaca tops at the mill: Baby (22,5 $\mu$ ), US\$ 18,50/Kg; Superfine (26 $\mu$ ), US\$ 12,50/Kg; Suri (26-27 $\mu$ ), US\$ 12,50/Kg and Adult (34 $\mu$ ), US\$ 5,00/Kg (Wool Record, 2006). This level of prices seems to indicate that they do not refer to dehaired fibre.

In the case of Guanaco fibre, the sole measure of keeping the producer informed of the real value of its fibre allowed to raise the price from US\$2/Kg greasy (fleeces and P&B) in the 1998-99 clip to US\$180/Kg (fleeces) in the 2004-05 clip. This last price is still considerably lower than that paid for Vicuña (tender 2004-05, INTA Abra Pampa: US\$661/Kg of greasy fleece and US\$252/Kg of P&B). The efforts made towards developing new buyers in Europe and Asia is giving results, however, much more remains to be done so that the producer can perceive the real market price, as reflected by the value of the garments made with this fibres (Adot et al., 2008).

Regarding the price of Vicuña, the firm Italane (Biella, Italy), responsible for buying the South American Camelids fibre in exclusivity for the Schneider Group, gives the following values: around US\$500/Kg greasy and more than US\$1.500/Kg dehaired (Wool Record, 2004). If to the US\$500/Kg of greasy fibre we apply the dehairing yield of 70% declared by the International Vicuña Consortium (IVC) for Types A and B (93% of production)<sup>3</sup> and we add the cost of dehairing of US\$80/Kg, we obtain a value of US\$794/Kg of dehaired fibre (Lichtenstein et al. 2002). Italane estimates that the volume of the clip varies between 2.000 and 6.000 Kg (Adot et al., 2008).

## 8.- CONCLUSIONS AND RECOMMENDATIONS

This scenery is highly negative for the interests of Argentina and the rest of the producing countries, as it allows buying and exporting Guanaco and Llama fibre at prices well below those of the market. To correct this situation we must: *i*) promote the formation of producers associations for the collection, classification and commercialisation of fibre, as a way of strengthening their commercial negotiating power; *ii*) undertake a definitive study of the real quality of Vicuña and Guanaco fibre (fines, length and yield) thus allowing to establish objectively their relative prices; *iii*) promote the dehairing industry, allowing this fibres to be industrialised in origin or exported almost dehaired; *iv*) promote the creation of a textile industry in accordance to the requirements of the market regarding quality and design; *v*) fight furtive hunting of Vicuña and Guanaco by all means available to the government (the hunter is persecuted but not those that acquire the fibre, that is, the real promoters and beneficiaries of the clandestine traffic); *vi*) control that the Administrative CITES Authority of the producing countries complies with the "Notifications" and "Recommendations" of this organism; *vii*) establish a methodology for shearing and classification that guarantees the provision of fibre classified in accordance with the particular characteristics of each species; *viii*) develop chemical tracers for Vicuña, Guanaco and dehaired Llama, that allow to control the origin and percentage of fibre all along the industrialisation and commercialisation process; *ix*) promote in the foreign markets the particular excellence of the fibres of Guanaco and dehaired Llama (origin trademarks must be developed for each of this fibres); and *x*) undertake the screening of the Llama populations not yet studied. At the same time, production of Superfine and Ultrafine Merino and Cashmere must be promoted, since these fibres are complementary of Vicuña, Guanaco and Superfine and Ultrafine Llama.

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<sup>3</sup> Fibre A: fleeces / Fibre B: flanks

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