

**CASHMERE AND MOHAIR  
QUALITY AND VALUE-ADDING POTENTIAL BY SMME'S**

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## **Introduction**

Rare, luxury or speciality animal fibres have an exclusively and characteristic, that are rarely associated with other fibres. Their scarcity is due to the fact that they are difficult to produce on a large scale, because of climatic conditions and/or genetic factors. Each animal fibre is often characterised by its own fibre properties, such as fineness, softness, warmth, lightness or lustre etc. making it unique in processing and wear performance, notably comfort and softness. These fibres include Goat hair (e.g. mohair and cashmere), Camel hair, Llama hair (alpaca), Vicuna and Angora hair from the Angora rabbit.

During the past two decades, consumers have exploited these unique and highly desirable fibre properties to their limit, causing the world textile industry to go through a revolutionary change, moving towards more comfortable, lighter, casual, and easy care type of garments. Manufacturers have had no alternative but to go for lighter fabrics with finer fibres (e.g. micro fibres) with a soft appealing handle and added comfort. For this reason, cashmere, being the second finest animal fibre produced in fairly large quantities and also mohair has become two of the worlds most sought after animal fibres today. South Africa has a vast number of goats, of which some 1.2 million are Angora goats and some 4,5 million are indigenous goats such as the Boer, Savannah and traditional goats. There are also some 1000 imported cashmere goats.

## **Mohair**

The use of mohair as a textile fibre goes back many thousands of years and the presence of mohair in any blended material is considered to lend elegance and quality to the garment. South Africa's  $\pm 1,2$  million Angora goats produce some 5 million kilograms of mohair which represent the bulk (60%) of the world's mohair of which about 90% is exported, most of which in a semi processed or unprocessed form. South African mohair (known as Cape Mohair), which is mainly produced in the Eastern Cape Province is regarded as the best, finest, highest yielding and lustrous in the world.

Although mohair contains less impurities than wool (e.g.  $\pm 5\%$  grease compared to the  $\pm 15\%$  for Merino wool), it requires far more specialised knowledge and experience to be able to process (mechanical and wet process) mohair successfully into a good quality product. For example, mohair is more sensitive to temperature and alkali conditions during scouring than wool, excessive levels of either often leading to a yellowing and loss of lustre. Most of such specialised knowledge is kept secret by the companies which have it.

Due to the general lack of fibre cohesion and bulk, relative coarseness and the generation of static electricity during processing it is not all that easy to process mohair into yarn. For this reason mohair is often blended with wool which can solve some of the problems. Specialised knowledge and expertise are required to select the correct types and levels of processing lubricants, additives, atmospheric conditions and the appropriate processing machinery to be able to process mohair successfully. The dyeing and finishing process is just as important in order to preserve mohair's lustre, brilliant colours and other properties associated with the outstanding quality and appearance of mohair.

Mohair's wide range of desirable characteristics, such as durability, resilience, comfort, coolness, lustre and smoothness makes it ideally suited for more than 200 end-uses, either woven or knitted. For example, in tropical light weight suiting, mohair adds coolness. In brushed articles, such as stoles, rugs and blankets, mohair provides warmth without weight. Mohair also has a wide application in fancy or novelty yarns where its properties provide aesthetic appeal, comfort and softness.

Because of its specialised characteristics, notably lustrousness and relative coarseness mohair is also prone to fashion which has a cyclic demand on the world's market. In order to counteract this effect it is important to increase the versatility and end-use application of mohair. This requires a concerted effort on product development aimed at capitalising on mohair's strengths. Creative and innovative ideas, preferably utilising indigenous and ethnic design and knowledge systems are particularly important in this respect, with SMME'S also being of particular interest. In the small scale processing of mohair preferably from greasy to end product is important. Nevertheless scale aspects relating to economics of scale and the availability of suitable small scale machinery often represent a problem. Faced mostly with a choice between relatively low production hand-operated machinery (e.g. spinning, weaving and knitting) and full production commercial machinery, the small entrepreneur is often faced to improvise and/or outsource. For example, considering the availability of small scouring machines it is possible to scour small lots of mohair in a tub containing 20 litres of water, 2% grated soap and 6% household ammonia per kilogram of fibre. Although most of South Africa's mohair are converted into their scoured or top form this is done in a few large mills and small quantities of appropriate fibre are often not available for small businesses, or else may only be available at a premium. This is even more so in the case of yarn, since only a relatively small proportion of our mohair is converted into yarn or fabric. As already mentioned equipment such as hand cards, spinning wheels, hand looms or domestic knitting machines are available on the market.

Training on the use of such machines can be obtained from weavers guilds or from the suppliers.

Ultimately the challenge lies in the innovative design of high value (niche) products for the export and tourist markets as well as for the upper end of the local market.

### **Cashmere**

The  $\pm$  4 million indigenous goats found in South Africa produce a fleece consisting of two distinct coats of fine down or undercoat (cashmere type) fibres and coarse fibres, the quantity and quality of the fine down varying greatly. It is believed that the utilization of fine

undercoat of these goats as an additional source of income would make the goat flocks more profitable, particularly if the fine down can be converted into the final product.

The South African Boer- and Savannah goats and other indigenous goats are good examples of such two-coated indigenous goats. Angora goats and most sheep do not produce two fibre coats. Under the umbrella of the Cashmere Working Group various organisations are involved in a programme aimed at exploring the potential of South Africa's indigenous goats in terms of textile fibres.

During the past two years of fibre collection by Textek/CSIR the South African Boer- and Savannah goats showed an average down weight of  $\pm 25$  grams per goat and the other indigenous goats  $\pm 10$  grams per goat (excluding Cashgora type of goat). For this reason the South African indigenous goat population cannot as yet be classified as cashmere goats (due to low yields and short fibre length of the fine cashmere type down). The immediate challenge now is to identify specific goats having the most potential and to breed goats with a much higher finer fibre yield. Of all the fibres produced in the world, cashmere is one of the most highly sought after because of its superb softness and comfort largely a consequence of its fineness, its average fibre diameter being between 14 and 18,5 micron, while that of human hair is approximately 60 micron and wool is generally coarser than 18 micron and mohair is generally coarser than 25 micron. Cashmere fibres have a dull wavy appearance and are not as lustrous as mohair or as evenly crimped as wool, the price and value being largely determined by colour and fineness and to a lesser extent fibre length. Similar considerations apply to the fine down fibres produced by indigenous goats.

Very little dehaired cashmere fibre or garments are imported, although cashmere blends with other natural fibres do exist in small quantities. World cashmere prices are just as prone to market fluctuation as any other natural fibres such as wool and mohair. Factors that influence the price include economic, fibre characteristics (fineness, colour and fibre length), demand, fashion and the amount and consistency of supply.

The South African Cashmere Industry is only a concept, i.e. at its embryonic stage, and there is as yet, nothing to process locally or export, the only fibre being that produced from indigenous goats during the exploratory work undertaken as part of the cashmere programme referred to previously.

After scouring, fibres such as cashmere, which occur as the one part of two coats, need to go through a dehairing process which only works efficiently and effectively as there are pronounced differences notably in fineness and length, between the two coats (between the down and guard hair).

It is important to mention that the presence of intermediate fibre in fleeces is undesirable because they are difficult to remove during the dehairing process. Consequently the commercial value of such fleeces is adversely affected. For easy and effective dehairing it is generally desirable that the ratio of the diameter of the guard hair to that of the down fibre be 4:1 and that the guard hair has a mean fibre diameter greater than 60 micron.

In order to test the quality and textile potential of indigenous goat down, small quantities of

the high quality Boer- and Savannah goat hair received by Textek/CSIR during the past two seasons were scoured, dehaired (using a Shirley Analyser laboratory machine) and processed successfully into knitted garments in either a 100% form or in blends with wool.

Samples of the cashmere type fibres so generated and which were submitted to international commission dehairers elicited the following comments:

Although the down component is generally characterised by good crimp, style and good down to guard hair diameter ratio, its relaxed fibre length of approximately 20-30mm is generally considered too short to enable successful dehairing and processing into high quality yarn. This is one aspect that therefore needs to be addressed.

It therefore appears that local cashmere type fibres produced by indigenous goats have potential provided goats producing better fibre yields and quantities length can be bred to make fibre harvesting and marketing economically attractive for the farmer and buyer alike. In terms of a local cashmere industry, the next important problem relates to the cost-effective processing of the fibre into finished products by SMME'S, which revolves around cost-effective small scale processing machinery, which is a similar problem to that facing the processing of mohair. This is also a problem facing the programme aimed at establishing a cashmere industry in South Africa, particularly during the early stages of the programme. The small quantities of cashmere presently produced in South Africa does not justify a costly dehairing process (±R1,2 million). The only other option lies in sending accumulated cashmere hair to overseas commercial dehairers for dehairing and then making the dehaired fibre (cashmere) available to local SMME'S, once its quality and value have been assessed.

### **Concluding Remarks**

The whole process of increasing, improving and utilising the fibre originating from South African goats (mohair and cashmere) not only supports the process of rural and economic development in South Africa, but also creates the associated, and much needed, value addition industries, largely in the form of SMME'S.

Nevertheless, considerable challenges face those wishing to achieve these objectives, as has already been touched upon in this paper.