

PROGRESS AND FUTURE OF A CASHMERE INDUSTRY IN SOUTH AFRICA

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ABSTRACT

This paper reports on the progress that has been made with the utilisation and promotion of fine down (cashmere type) fibre production from indigenous goat breeds in South Africa and on the results obtained on samples received during the past two years of harvesting. Reference is made to the down fibre quality, yield and profile of the samples compared to Chinese cashmere. The paper concludes with the future possibilities of establishing a viable cashmere industry in South Africa.

INTRODUCTION

During the past two decades the world textile industry has gone 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 (eg. 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, has become one of the world's most sought after animal fibres today.

PROGRESS

In South Africa the vast number (\pm 4 million) of indigenous goats, such as the Boer, Savannah and other traditional goats (owned by small farmers) are primarily kept for their meat, skin products and for other traditional purposes as well as for controlling bush encroachment. Many of these goats have two coats, viz a fine down (cashmere type) and coarse guard hair although over the years breeding have tended to favour attributes other than the fine down. Recognising this rich resource, it was felt that if the highly priced cashmere type of down fibre yield could be increased and exploited this could lead to the possibility of creating a viable cashmere industry in South Africa, thereby adding value to the animals. For this reason, Grootfontein/Döhne ADI's and Textek have joined hands in a pilot project in which the cashmere producing potential (quantity and quality of the hair) of the various breeds is being investigated throughout the country.

Grootfontein/Döhne ADI's concentrate on the breeding and genetic side (selection, upgrading etc.) whereas Textek concentrates on the fibre evaluation, processing and utilisation including

rapid techniques for analysing the fibre quality (fineness and down yield), processing techniques, product development and marketing.

The project is a national research initiative of Textek, Grootfontein, Döhne institutions and they work in close cooperation with the Cashmere Working Group which consists of Grootfontein/Döhne, Cedara, Vredendal and Potchefstroom ADI's, Agricultural Research Council (ARC), Fort Cox Agricultural College, Agricultural and Rural Development Research Institute (ARDRI), and the Boer Goat Breeders Association. The Cashmere Working Group also receives support from the National Department of Agriculture and Provincial Agriculture Departments in various provinces.

Great progress has been made during the two past seasons to identify the relevant role players, such as the Directors of Extension, Extension Officers, animal scientists of the various regions and the first National Strategic Meeting of the Cashmere Working Group was held in August 1997 to determine the goals and objectives of the project.

Various avenues, such as Extension Officers in various goat producing provinces, Farmers Associations, Community Leaders, Boer Goat Association, Agriculture News, Farmer's Weekly, Landbou Weekblad, Land, Agriforum and brochures in various languages were used to communicate information as widely as possible and to motivate farmers to become involved in a project and to harvest the fine down (i.e. cashmere) of their goats for evaluation purposes.

Workshops were also set up in the various provinces for training interested farmers and Agricultural Extension Officers who play a key role in the cashmere project and who act as consultants and organise fibre harvesting and collection of combed hair in rural areas.

Approximately 280 combs were constructed at Textek during the past two seasons and distributed countrywide, free of charge, to interested parties.

During the past two seasons, a total of 2500 samples (from 3000 goats) with a total mass of 97 kilograms from 280 goat owners were evaluated by Textek.

The harvested fleeces collected were sent to Textek for evaluation concerning down fibre quality (fineness and yield). The results were reported to the producers.

An accurate and rapid method, using an OFDA instrument, for the simultaneous determination of down fibre fineness and yield (ratio of down fibre to guard hair) without prior physical separation of the fractions, has been developed by Textek and used for evaluating the samples.

A data base of all interested farmers and parties has been established and serves as a basis for the rapid identification of individual farmers or farmer groups for the realisation of future breeding and production goals.

The following table gives a summary of the down fibre characteristics (quality and quantity) of the different goat breeds or strains over the past two seasons, as determined by means of the OFDA instrument

TABLE I

Down fibre quality and quantity in South African double-coated breeds or strains				
	Boer goats	Savannah goats	Traditional goats	Gorno Altai goats
Down diameter	16,0 - 18,5 µm	16,0 - 18,5 µm	14,0 - 16,5 µm	18,5 - 19,0 µm
Down length	20-31 mm	20-31 mm	15 - 30 mm	28 - 31 mm
Down crimp	good	good	good	poor
Down style	good	good	good	poor
Down weight	10-50 g	10 - 50 g	5 - 15 g	100 - 500 g
Down yield (Combed fleeces)	50% - 70%	50% - 70%	60% - 80%	50% - 70%
Down colour	white and white/colour	white	white and white/colour	brown
Other comments	-	-	-	silky handle, very matted, intermediate fibres

The comments regarding the down fibre length, crimp, style and other refer to the opinion of commercial dehairers and processors of cashmere hair.

In summarising the above, it is clear that the down fibre from the three indigenous breeds or strains (Boer, Savannah and traditional goats (non Cashgora type) are superior to the Gorno Altai goats in terms of crimp, style, down fibre and guard hair diameter ratio (1:4), with a good diameter profile, i.e. without indications of intermediate fibres. The low down fibre length (less than 40mm.) can result in considerable fibre loss, waste, during dehairing. Although the Gorno Altai goats have commercially acceptable down fibre weights, the down fibre diameter of most of the fleeces tested to date, exceed the commercial accepted value of 18,5 micron and finer for cashmere. Furthermore the poor crimp and style of the down fibres together with the presence of an intermediate or third fibre component (Cashgora type) does not allow the Gorno Altai to be classified as cashmere of good quality.

The down fibre diameter profile of the South African indigenous breeds/strains (such as the Boer Goat) compare very favourably with the profiles of Chinese cashmere as shown in the

table below.

TABLE II

Down fibre diameter profile in fleeces of male and female SA Boer goats and Chinese Liaoning goats				
Down fibre diameter class	Percentage of fibres per diameter class			
	S A Boer goat		Chinese Liaoning goat	
	males (%)	females (%)	Males (%)	females (%)
<10 µm	2.1	2.9	4.3	8.4
10 - 20 µm	88.9	91.1	77.9	85.6
20 - 30 µm	8.8	5.9	17.3	5.7
>30 µm	0.2	0.1	0.6	0.3

The presence of intermediate fibres in fleeces is undesirable because it is difficult to remove the fibres during the dehairing process. Consequently, the value of such fleeces is adversely affected. For this reason, industrial dehairing of raw cashmere requires a strong distinction between the two fibre populations (fine and coarse) to enable 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.

The proportion (%) of animals producing cashmere type of down fibre (defined as having a diameter less than 18,5 micron) in the different yield classes is given in table 3.

TABLE III

YIELD	<10 gm	10-50 gm	50-100 gm	100-150 gm	150-200 gm	>200 gm
% Boer and Savannah goats	0,6	76,3	17	4,5	1,1	0,5
% Traditional goats	46	41	11,7	0,8	0,5	-
% Gorno Altai goats	-	-	-	-	5	95

The Boer- and Savannah goats showed an average down weight of ± 25 g/goat whilst traditional goats averaged ± 12 g/goat, with a coefficient of variation as high as 55%, indicating a considerable variation in down weight within breed/strain, and therefore a good genetic pool for future improvement by selective breeding. Goats with a woolly neck are generally good cashmere producers and down fibre yields of up to 150g/goat and even as high as 400g/goat have been encountered.

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 two qualities and blends thereof with wool. Knitted

garments were produced and many people were astonished with the fine, soft handle of the garments.

FUTURE OF CASHMERE IN SOUTH AFRICA

Owing to global trends in apparel, a large market exists for finer and high quality textile fibres in the world. The vast number (± 4 million) of indigenous goats which possess the ability to produce a double coated fleece paves therefore a way of diversification of existing agricultural resources without a large capital outlay. The utilization of the fibres as an additional source of income (value addition) would make the goat flocks more profitable. Considering the qualities of the Boer goat, such as high meat production, good fertility, mainly white coat colour, the ability to control bush encroachment and the large variation in down weight (yield) and fineness, there can be little doubt that provided a special breeding programme is followed, which involves the selection of high down producing animals and a cross breeding programme with imported cashmere goats, a viable cashmere industry in South Africa is possible. For this purpose, the German Volkswagen Foundation has funded the importation of Australian Feral rams (due to arrive in October 1998) with the aim of cross breeding with Boer goats with the purpose of breeding a type of goat that will produce, in addition to meat, also substantial amounts of cashmere. The necessary research will be carried out by Grootfontein/Döhne ADI's.

The release (sale-April 1997) of approximately 500 Gorno Altai cashmere goats by Sentrachem has caused great interest in the project in so far that even cross breeding of the Gorno Altai with indigenous goats, such as Boer goats, has started. The release of Australian Feral goats, by a private owner in 1999 will no doubt provide further momentum to the project.

In spite of the fact that local cashmere is shorter than Australian cashmere, Textek/CSIR has decided to offer local farmers similar prices to those paid Australian cashmere for the 1998 season for combed hair for experimental purposes. It is hoped that this will continue to stimulate the interest of goat owners.

This project supports the whole process of rural and economic development in South Africa, aiming to provide a potential source of supply of this high quality, high priced sort after fibre locally, together with the associated value addition industry largely the form of SMME'S.