Progress in the utilization and promotion of South African indigenous goats for cashmere production

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8th International Goat Congress in Pretoria
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Introduction

- Consumers are increasingly moving towards more comfortable and easy care garments
- Manufacturers have had no alternative but to go for lighter fabrics with finer fibres
- Cashmere is the second finest animal fibre (14 to 18.5 micron) produced in fairly large quantities and is the world's most sought after animal fibre today.

South Africa’s position and project objectives

- South Africa has about 6 million indigenous goats
- 80% are in possession of the poor
- Primarily kept for their meat, skin products and for other traditional purposes.
- Many of these goats have two coats, viz a fine down and coarse guard hair.
- CSIR, jointly with the Cradock Agriculture Experimental Station, embarked on establishing on a cashmere agro-industry utilizing the fine down of indigenous goats
- Exploiting this rich resource could lead to a viable cashmere industry in South Africa thereby adding value to existing animals
- A countrywide study was conducted to determine the ability of the indigenous goats to produce cashmere like fibre.

Results

- An accurate and rapid method, using an Optical Fibre Analyser (OFDA) instrument, was developed to simultaneously measure fibre fineness and yield without physical separation of fibre fractions

Conclusions

- A large number of indigenous goats possess two distinct coats, soft, fine undercoat (cashmere) and a coarse overcoat (guard hair)
- The down fibre length and yield need to be improved by following an upgrading programme in order to lead to a viable cashmere industry in South Africa
- This could lead to the diversification of existing agriculture resources without a large capital outlay, creating additional income for small goat farmers and an opportunity for beneficiation and small agro- industries
Utilization of the fibres as an addition source of income would make the goat flocks more profitable
Cashmere production is labour intensive and ideally suited for farmers with small number of goats
Supports rural and economic development

Programme status

Poverty Alleviation funds provided by the Department of Science and Technology enabled the CSIR and the Cradock Agriculture Experimental Station to launch various upgrading programmes
The increased yield of cashmere type of fibres as an additional source of income is being stimulated by crossbreeding high yielding cashmere bucks with indigenous does
First offspring of the improved goats have been born and are now being assessed
Goat farmers are being trained and encouraged to harvest present animals and to apply appropriate goat farming practices
Processing facilities to dehair the fibres and to convert cashmere fibre into marketable products are being developed
Technical and business related training is being provided to entrepreneurs
Two pilot knitting SMEs have been set up to convert yarn into products for tourists

Table 1: Down fibre quality and quantity for South African double-coated goat breeds

<table>
<thead>
<tr>
<th></th>
<th>Boer goats</th>
<th>Savannah goats</th>
<th>Traditional goats</th>
<th>Gorno Altai goats</th>
</tr>
</thead>
<tbody>
<tr>
<td>Down diameter (µm)</td>
<td>16.0 – 18.5</td>
<td>16.0 – 18.5</td>
<td>14.0 – 16.5</td>
<td>18.5 – 19.0</td>
</tr>
<tr>
<td>Down length (mm)</td>
<td>20-31</td>
<td>20-31</td>
<td>15 - 30</td>
<td>28 – 31</td>
</tr>
<tr>
<td>Down crimp</td>
<td>good</td>
<td>good</td>
<td>good</td>
<td>Poor</td>
</tr>
<tr>
<td>Down style</td>
<td>good</td>
<td>good</td>
<td>good</td>
<td>Poor</td>
</tr>
<tr>
<td>Down weight per goat (g)</td>
<td>10 - 50</td>
<td>10 - 50</td>
<td>5 - 15</td>
<td>100 – 500</td>
</tr>
<tr>
<td>Down yield (%) (Combed fleeces)</td>
<td>50 - 70</td>
<td>50 - 70</td>
<td>40 - 60</td>
<td>50 – 70</td>
</tr>
<tr>
<td>Down colour</td>
<td>white and white/colour</td>
<td>white</td>
<td>white and white/colour</td>
<td>Brown</td>
</tr>
<tr>
<td>Other comments</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>silky handle, very matted, intermediate fibres</td>
</tr>
</tbody>
</table>
Comments: down fibre length, crimp, style and other refer to the opinion of commercial dehairers and processors of cashmere hair.

- Results have indicated that over 80% of the ± 4000 indigenous (Boer) goat fleeces tested contain typical cashmere type down (18.5 micron and finer)
- Average down fibre weight for Boer and Savannah goats was 25 grams per goat and the Traditional goats averaged 12 grams per goat with a 55% coefficient of variation
- Average down fibre length was rather short

Table 2: Down fibre diameter profiles of South African Boer Goat and Chinese cashmere.

<table>
<thead>
<tr>
<th>Down fibre diameter class</th>
<th>Percentage of fibres per diameter class</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>S A Boer goat</td>
</tr>
<tr>
<td></td>
<td>Buck (%)</td>
</tr>
<tr>
<td>&lt;10 μm</td>
<td>2.1</td>
</tr>
<tr>
<td>10 - 20 μm</td>
<td>88.9</td>
</tr>
<tr>
<td>20 - 30 μm</td>
<td>8.8</td>
</tr>
<tr>
<td>&gt;30 μm</td>
<td>0.2</td>
</tr>
</tbody>
</table>

Table 3: Proportion of animals (%) producing cashmere type down fibre (less than 18.5μm) in different yield classes

<table>
<thead>
<tr>
<th>Animals</th>
<th>Yield</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&lt;10 g</td>
</tr>
<tr>
<td>% Boer and Savannah goats</td>
<td>0.6</td>
</tr>
<tr>
<td>% Traditional goats</td>
<td>46.0</td>
</tr>
<tr>
<td>% Saffer goats</td>
<td>-</td>
</tr>
<tr>
<td>% Gorno Altai goats</td>
<td>-</td>
</tr>
</tbody>
</table>

The combed hair which was scoured/cleaned, dehaired and blended with wool processed successfully into yarn. Knitted garments with a soft handle were produced

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