DEVELOPMENT OF SAREE IN SILURUS GLASS FROM CAPRA HIRCUS LANIGER

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ABSTRACT

We generally hear many types of sarees name in our lives. But have we ever heard of woolen saree anywhere, probably not. Woolen yarn is used as shawls, scarves, accessories etc. It is also used as embroidery thread in fabric but not as a saree. So we have planned to introduce a new product of weaving woolen saree in handloom. The process follows weaving saree with warp and weft with a design consisting of motif in it. The sample undergoes testing like comparison of wool and cashmere biological structure under microscope, tensile strength and elongation, colour fastness to water and light, draping ability and wash ability. This project deals with the study of wool, its biological structure, its types and its production. We have decided to use cashmere yarn for weaving saree which is one of the types of wool. According to our studies cashmere is light weight wool used for weaving shawls and by testing the properties of Cashmere fabric we have decided to develop the product. The purpose of this project is whether to find wool can be able to weave as saree and can be worn in all the climatic conditions.

Keyword : - *woolen saree, Testing, product development*.

1. INTRODUCTION:

In Indian culture, nowadays, fashion plays a major role among people. In relation to that, saree plays vital role among women in India. There are lot of new types of sarees available for Indian women not for special occasions like festivals, but also they have become a part in their normal lives. Sarees are meant to be one of the oldest garments in Indian culture. In the list of top 9 Asian garments, saree occupies 7th in its position. Ashavali saree – Gujarat, Baluchari saree - West Bengal, Banarasi saree - Uttar Pradesh, Bandhani saree - Rajasthan / Gujarat, Batik saree – West Bengal, Bomkai saree – Orissa, Chanderi saree - Madhya Pradesh, Chikan saree - Uttar Pradesh, Dharamavaram saree - Andhra Pradesh, Eri silk – Assam, Guntur saree - Andhra Pradesh, Garad saree - West Bengal, Ilkal saree – Karnataka, Jamdani Dhakai saree - West Bengal, Kalamkari saree - Andhra Pradesh, Kanjeevaram saree - Tamil Nadu, Kasavu saree – Kerala, Kota saree – Rajasthan, Lehariya saree – Rajasthan, Mangalgiri saree - Andhra Pradesh, Narayanpet saree – Telungana, Paithani saree – Maharashtra, Patola saree – Gujarat, Sambalpuri saree – Orissa, Tant saree - West Bengal, Uppada saree - Andhra Pradesh, Venkatgiri saree – Andhra Pradesh are 27 different types of saree and its name. In addition to that we have decided to introduce woollen saree in cashmere yarn.

1.1 WOOL:

Wool is one of the natural fibres obtained from sheep and goats. The hair of the goats and sheep is rich in protein (i.e. keratin) which we call wool. Wool is mostly used in blankets, carpets, winter clothes like shawls, scarves, sweaters, etc. Wool is generally used for knitting, but some types of wool are used for both knitting and weaving purposes. Wool is said to be the most forgiving fibre because it stretches easily and is easy to work with it. Wool is a cloth made from the hairs of a variety of animals. While most people identify the word "wool" with sheep, there are several other types of wool. The thread Count Variations in Fabric is up to 200 threads, with greater thread counts causing additional fragility. It is breathable to some extent. It has an excellent ability to wick moisture. Heat retention abilities are also excellent. Its stretching ability is medium. It is washed in both cold and warm water. Sweaters, socks, suits, pants, underwear, caps, gloves, and other cold-weather apparel, carpets, fire fighting gear, and insulation are its common uses. Australia is the world's largest exporting and producing country today. Wool Marketing was created to highlight the challenges that wool faces as a fibre in a highly competitive global apparel textile market.

1.2 TYPES OF WOOL:

There are 10 types of wool:

Merino wool: The source of merino wool is breed of domestic sheep. It is characterized by very fine soft wool, and its origin is Spain.

Cashmere wool: The source of cashmere wool is Cashmere goat. Cashmere wool is expensive and luxurious type. The hair diameter is under 18 microns. Cashmere goats produce 150 grams of wool per year. This type of wool is native of India.

Mohair wool: The source of mohair wool is angora goats. The wool is thick and wavy in nature. The availability of wool is in China and South Africa.

Alpaca wool: This type of breed goats is native of South America. The hair diameter is about fewer than 18-25 microns. It is characterised by Durable, Fire resistant, Hypoallergenic, Lightweight, Luxurious, Silky, Soft, Warm and Water resistant.

Camel wool: The wool is obtained from camel. It is rough and less durable in nature. The availability of wool is in Russia, China, Mongolia, Iran, Turkey and Tibet.

Virgin wool: Another name for virgin wool is lamb's wool. It cannot be recycled.

Angora wool: The wool is obtained from breed of rabbit. It is very expensive. The availability of wool is in China, United States, Europe and Chile.

Vicuna wool: This type wool can be found in Peru which is relative to Alpaca. The availability of wool is in Peru and South America.

Llama wool: It is a rare type of wool and too rough in nature. The availability of wool is in South America.

Qiviut wool: It is native of Alaska. It is very rough in nature. The availability of wool is in Alaska, Canada.

1.3 WOOL PRODUCTION:

The Southern Hemisphere countries that contribute 3/4th of global wool production are Australia, New Zealand, South Africa, and Argentina, which account for the lion's share of global wool production. China, India, the United Kingdom, Germany, Hungary, and C.I.S. are the other traditional wool producing countries. Australia is the world's leading producer of wool. It is also a major wool exporter. High-quality Merino sheep and excellent industry management enabled the country to become the undisputed leader in the global wool industry.

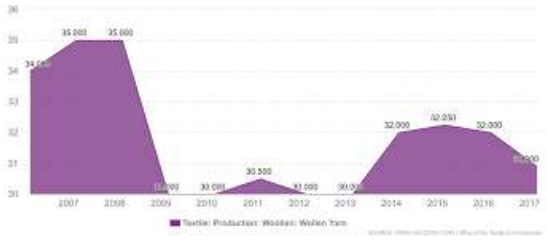


FIG 1: WOOL PRODUCTION GRAPH

1.4 PROPERTIES OF WOOL:

Wool has UV protection naturally up to 30+! It absorbs UV rays before it can come into contact with human skin.

It has antibacterial and antimicrobial properties; it contains fatty acids that inhibit the growth of mold, mildew and bacteria.

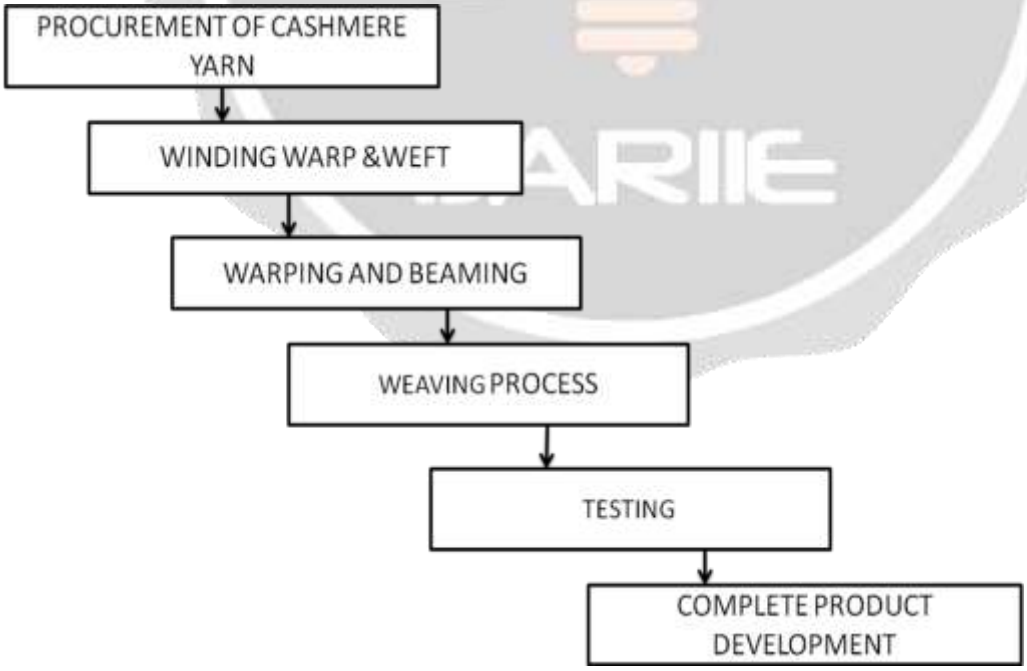
It is stain resistant and easily wiped off.

It is easy to care.

It insulates even in wet and is also durable.

We have preferred Cashmere wool. The reason is that saree must be light in weight and easy to wear, the source availability of cashmere yarn is in India. Cashmere wool is fine and soft in texture and so our project aims to establishing the fact that it is suitable for making saree.

2. METHODOLOGY:



3. MATERIAL:

3.1 CASHMERE FABRIC

FABRIC NAME	**CASHMERE**
FABRIC ALSO KNOWN AS	**KASHMIR FABRIC OR PASHMINA**
FABRIC COMPOSITION	**FROM CASHMERE OR PASHMINA GOAT**
FABRIC BREATHABILITY	**HIGH**
MOISTURE WICKING ABILITY	**HIGH**
HEAT RETENTION ABILITY	**MEDIUM**
STRETCHABILITY	**MEDIUM**
RECOMMENDED WASHING	**COLD/COOL**
COMMONLY USED IN	**SWEATERS, HATS, SHIRTS, SOCKS, UNDERWEAR, THERMAL GEAR, HOSIERY, SCARVES, GLOVES.**

TABLE 1: CASHMERE FABRIC CHARCTERS

Cashmere is not insulative while compared to other types of wool, that helps to make weaving highly dense but thin in nature. It is considered sustainable and ethnical.
Today, the fabric is mainly produced in China and in some places in India.

Fig 2: Testing sample of cashmere fabric

3.2 METHODS OF CASHMERE FABRIC MAKING:

SHEARING → CLEANING → COMBING → SPINNING → CLEANING AND DYEING
WEAVING → FINAL TREATMENTS PACKAGING

3.3 TYPES OF CASHMERE FABRIC:

Cashmere wool: very fine and soft but strong in nature.
Pashmina wool: similar to cashmere
Grade C cashmere: rough in nature
Grade B cashmere: slightly rough or scratchy
Grade A cashmere: super fine.

3.4 CERTIFICATION FOR CASHMERE WOOL:

Global Organic Textile Standard (GOTS)
Sustainable Fibre Alliance (SFA)
Kering Standard
Recycled Claim Standard (RCS)
Global Recycled Standard (GRS)

3.5 TESTING:

3.5.1 IDENTIFICATION OF WOOL AND CASHMERE YARN:

Wool and cashmere are difficult to identify them through eye and touch. Cashmere and wool are common high-end textile materials, is similar to sheep wool in appearance and chemical and physical properties. Currently, cashmere and wool is still manually identified with the microscopic inspection method, in which the inspector uses a charge-coupled device (CCD) camera mounted on a microscope to observe and analyze the visual morphological characteristics of the fibre surface, based on which different types of fibre are empirically identified.

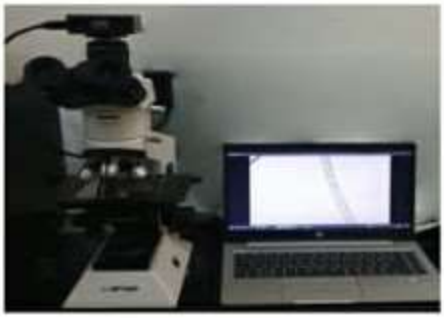


Fig 3 Microscope view

3.5.2 ANALYSING THE FIBER BY ITS MORPHOLOGICAL FEATURES AND ITS DIAMETER THROUGH MICROSCOPIC VIEW:

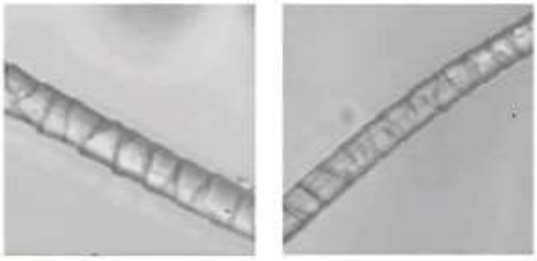


Fig 4 cashmere

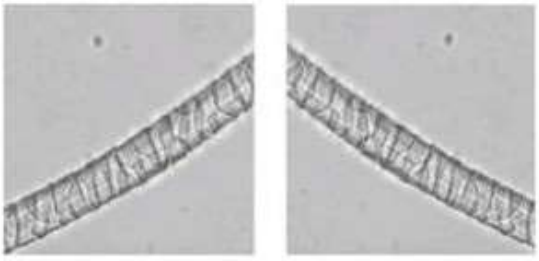


Fig 5 wool

The morphological features and diameter various in each picture the **Fig 4** shows neat and less in diameter when compared to **Fig 5.**

3.5.3 TENSILE STRENGTH:

Sample tested at: R.H.65% ±2%and temperature. 27 degree C± 2 degree C
Rate of traverse: 100mm/min.
Specimen size: 200*50mm

FABRIC-TENSILE STRENGTH(STRIP METHOD)-IS (IS 1969:Part 1)	**CASHMERE WOOL FABRIC SAMPLE**
Warp Strength (kg)	11.85
Warp Elongation (%)	25.98
Weft Strength (kg)	7.96
Weft Elongation (%)	31.16

Table 2: Tensile Strength

Cashmere wool fabric sample –**Warp**
Gauge length mm – 200, width mm – 50

Specimen	Peak load kg	Elongation @break %
1	11.8980	26.7052
2	11.7810	25.6202
3	11.8750	25.6150
Specimen	Peak load kg	Elongation @break%
Min.	11.7810	25.6150
Max.	11.8980	26.7052
Avg.	11.8513	25.9802
Std.	0.0506	0.5127
Var.	0.4271	1.9735

Table 3: Tensile strength in warp

Cashmere wool fabric sample –**Weft**
Gauge length mm – 200, width mm – 50

Specimen	Peak load kg	Elongation @break %
1	8.2890	39.0850
2	7.7040	28.9699
3	7.8880	25.4499

Specimen	Peak load kg	Elongation @break%
Min.	7.7040	25.4499
Max.	8.2890	39.0850
Avg.	7.9604	31.1683
Std.	0.2442	5.7795
Var.	3.0681	18.5429

Table 4: Tensile strength in weft

3.5.4 SHRINKAGE:

(-) sign indicates shrinkage, (+) sign indicates elongation

DIMENSIONAL STABILITY TO WASHING ISO	**CASHMERE FABRIC – WOOLLEN FABRIC**
Conditioned at Relative Humidity,%	65
Conditioned at temperature, deg C	20
Machine used - Wascator	Type A
Washing & Drying method	ISO 6330-4N- Tumble dry
Detergent used	Reference Detergent 3+Sodium per borate+TAED
Ballast used	TYPE II
Dimensional stability, % warp	-48.8
Dimensional stability, % weft	-67.9

Table 5: Dimensional stability.

3.5.5 COLOUR FASTNESS:
Colour fastness to washing: test 3

CHANGE IN COLOUR: 5-No Changes, 4- Slightly changed, 3- noticeably changed, 2- considerably changed, 1- much changed.

COLOUR FASTNESS TO WASHINHG: TEST 3	CASHMERE FABRIC – WOOLLEN FABRIC
Change in colour	1-2
Staining on	.
viscose	4-5
Acrylic	4-5
Polyester	4-5
Nylon	4-5
Cotton	4-5
Tri Acetate	4-5

Table 6: colour fastness to washing

Colour fastness too light:

BLUE WOOL RATING: CHANGE IN COLOUR: 8- excellent, 1- poor.

COLOUR FASTNESS TO LIGHT ISO	CASHMERE FABRIC – WOOLLEN FABRIC
Light fading (Exposed to blue wool 3)	2
Changes in hue	Yes

Table 7: colour fastness to light

4. CONCLUSIONS

We have concluded that woollen saree can be woven in India through handlooms, but the people can be able to worn in climatic condition which is under minus degree Celsius. Cashmere yarns are best choice for weaving as saree but the cost of the yarn is high when compared to other wool so it is not exists as a saree. The other reason is that according to climatic conditions in India northern region experience more cold when compared to southern region, so the usage of cashmere yarn is higher in northern region than in southern region so that the import of yarn is high in it cost.

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