Fibre to Fabric

Sources Of Woollen Fabrics

We know that fabrics are made from fibres. Fibres can be natural as well as artificial. We already know that cotton and jute fibres are obtained from plants. In this part, we will study about fibres like wool and silk, which are obtained from animals.

Cotton fibres

Jute fibres

Silk fibres

Wool fibres

Wool

Wool is obtained from sheep. **But, is it only sheep that gives wool?** There are various other animals that give wool, for example, Goat, Yak, Llama, Camel, Alpaca etc. A common feature of these wool yielding animals is that they have thick hair on their bodies. Also, these animals are generally found in colder regions.

Sheep

Goat

Yak

Alpaca

Camel

In Tibet and Ladakh, yak wool is very common. In the hilly regions of Jammu and Kashmir, Angora goats are commonly found that yield angora wool. The very famous Pashmina shawl is obtained from underfur of Kashmiri goat.

The major source of wool is sheep. A sheep has two types of hair on its body:

- Hard and coarse beard hair
- Soft and fine under hair

Wool is made from the soft and fine under hair of sheep. Some breeds of sheep only possess the soft under hair. This characteristic is induced in a sheep by a process

called **selective breeding**. In this process, animals with desired characteristics are chosen to give birth to offspring with the same characteristics.

The given table lists some Indian breeds of sheep.

Breed	Quality of wool	Place of rearing
Lohi	Good quality wool	Rajasthan, Punjab
Marwari	Coarse wool	Gujarat
Patanwadi	For hosiery	Gujarat
Nali	Carpet Wool	Rajasthan, Haryana, Punjab
Bakharwal	For woollen shawls	Jammu and Kashmir
Rampur bushair	Brown fleece	Uttar Pradesh, Himachal Pradesh

Processes Involved In Rearing And Breeding Of Sheep To Obtain Fibres Of Wool

Sheep are domesticated animals, which are mostly reared for wool and meat. When the fleece or hair of sheep grows long, they are cut and wool is made from them. The first step of obtaining wool from sheep is called **rearing and breeding.**

1. Rearing and Breeding

Sheep are reared in many parts of our country, especially in the hilly regions. Sheep are usually reared and bred in the states of Jammu and Kashmir, Himachal Pradesh, Uttaranchal, Sikkim, and Arunachal Pradesh. They are also reared in plain areas like Haryana, Punjab, Rajasthan, and Gujarat.

Sheep are herbivorous animals. They feed on grass and leaves. To obtain good quality wool from sheep, shepherds also give them a mixture of pulses, corn, jowar, and oil cakes. Shepherds are usually seen taking their herds of sheep for grazing on mountains in India. However, during winters, sheep are kept indoors and are fed on leaves, grains, and dry fodder.

The fibre is then processed into wool, which is used for knitting sweaters or weaving shawls. The processing of fibre into wool involves the following steps:

2. Shearing

The fleece of sheep is removed along with a layer of its skin. It is normally done in hot weather, so that the sheep can survive without its fur coat. **Is it not surprising that the sheep does not get hurt while it is sheared?** This is so because the uppermost layer of its skin is dead.

3. Scouring

The sheared skin with hair is then washed thoroughly to remove dust, grease, or dirt. Scouring can be done in tanks or by machines.

4. Sorting
Hair of different textures are then separated.
5. Separation of Burrs
Burrs are small fluffy fibres that are separated from the hair. These fibres are again scoured and dried. The wool obtained is now ready to be drawn into fibres.
6. Dying of fibres
Fibres are then dyed in various colours.

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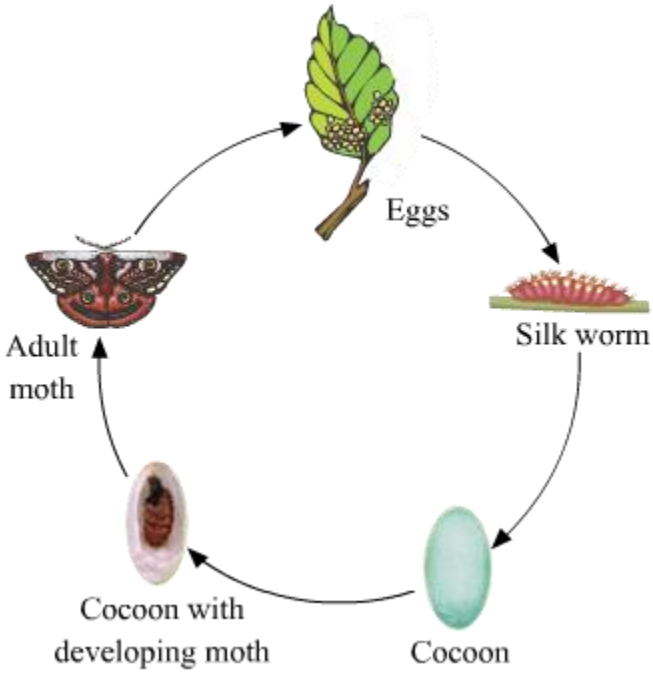
7. Rolling into Yarn

Fibres obtained are then straightened, combed, and rolled into yarns. These yarns are then used to make fabrics.

Processes Involved In Obtaining Silk from Silk Moths

Silk is an animal fibre, which is obtained from silkworms that live on mulberry trees. **The rearing of silkworms to obtain silk is known as sericulture**. During a stage of its life cycle, the silkworm weaves a net around itself. Silk is then obtained from this net. To get an insight of this process, we will first study the life cycle of a silkworm.



The life of a silkworm starts when a female moth lays eggs on the mulberry leaves. After sometime, these eggs hatch into larvae. **These larvae are known as caterpillars or silkworms.** Slowly these caterpillars grow in size by feeding only on the leaves of mulberry trees.

The next stage in the life cycle of a silkworm is a **pupa**. When the caterpillar has grown large enough and is ready to go to the stage of pupa, it starts weaving a net around itself to hold itself. Then, it moves its head from one side to another, making a figure eight (8). During these movements, caterpillars secrete a fibre made of protein, which solidifies and hardens when exposed to air for some time. This is the **silk fibre**. Caterpillars continue to spin silk fibre till they completely get covered by these fibres. This silk covering in which a silkworm covers itself is known as a **cocoon**. Further development of the silkworm takes place inside the cocoon, and it enters the pupa stage. After sometime, the pupa enters into the adult stage and emerges out of the cocoon as a moth. The whole process thus continues and is known as the life cycle of a silkworm.

There are large varieties of silk moths that yield silk yarns of different textures. While the most common silk moth is the mulberry silk moth, there are different moths giving different textures such as tassar silk, mooga silk, kosa silk etc.

The lifecycle of silk moth is summarized in the given animation.

Do you know that India is one the largest producers of silk in the world? In India, women are significantly involved in the industry of silk production. However, the largest producer of silk in the world is China.

Silk thread is obtained from the cocoon of a silkworm. Therefore, to obtain silk on a large-scale, silkworms are reared. Then, their cocoons are collected and the thread is obtained.

Do You Know:

The discovery of silk took place in China. According to a Chinese legend, a Chinese empress, Si-lung-Chi, was upset over the damaged leaves of the mulberry tree. She asked the emperor, Huang-ti, to find the reason for the damage. Later, she found out that some white worms had eaten up the leaves. She also noticed that these worms were spinning shiny cocoons to cover themselves. Accidentally, one day a cocoon fell into her cup of tea and the delicate threads of silk (present in the cocoon) got untangled. This is how the silk industry started in China. It was a closely guarded secret for a very long period of time.

Let us now study the process of obtaining silk from silk worms.

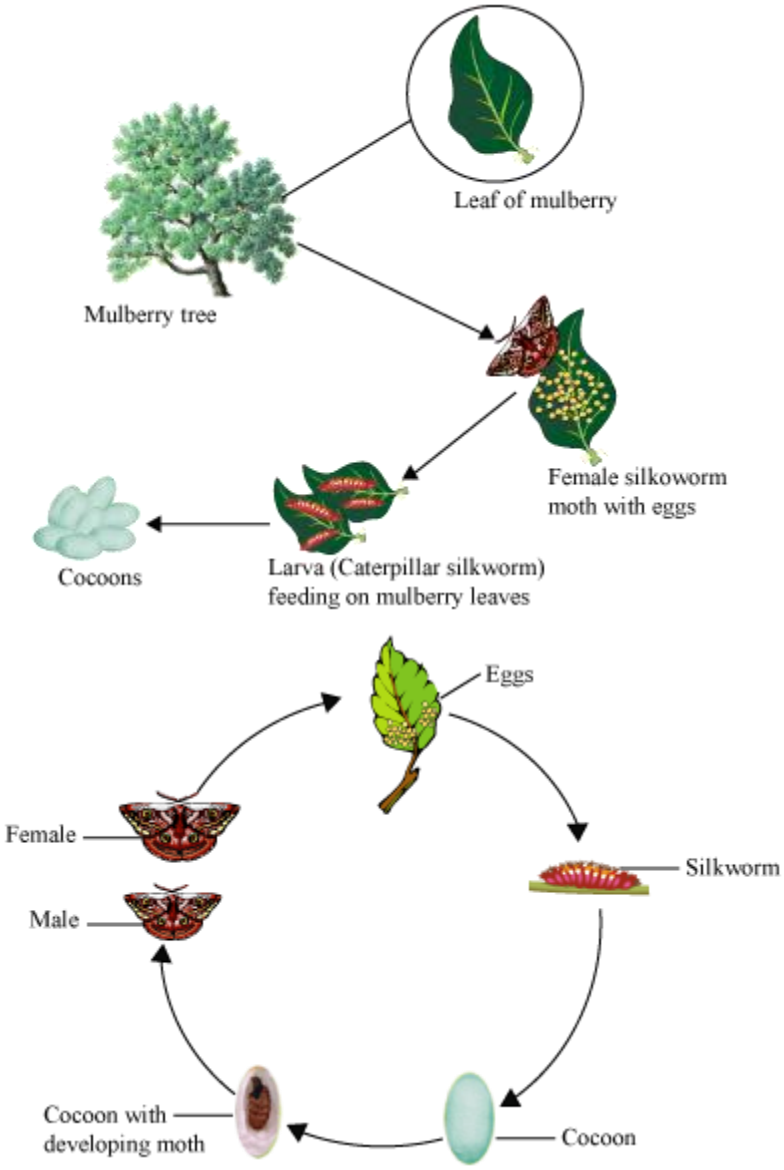
Rearing of silk worms:

1. The female silk moth lays eggs on mulberry leaves, which are then transferred to a piece of paper or cloth. The eggs are stored under hygienic conditions, in a specific temperature and pressure for the larvae to hatch.

2. When the larvae hatch, they are placed on clean bamboo trays and are fed on leaves of the mulberry tree. Caterpillars eat a large amount of leaves and increase in size at a very rapid pace. Since a lot of mulberry leaves are required for the rearing of silkworms, this activity is carried out in a season when new leaves sprout on mulberry trees.

3. The caterpillars stop eating after 6 weeks and move to a chamber in the bamboo tray. There, they spin a cocoon and get attached to the tray. These cocoons are then collected by farmers and processed to form silk fibres.

Hence, the process of rearing can be summarized as shown below.



After the process of rearing is completed, the processing of silk is done in the following manner.

Processing of silk:

1. Cocoons are collected and kept under the sun, or boiled, or exposed to steam. This helps in separating out the silk fibres. The process by which silk thread is separated from the cocoon is called **reeling the silk**.

2. Then, the spinning of silk fibres into threads is done.

3. The silk threads obtained are woven into the desired clothes.