

Physical And Commercial Characteristics Of Cocoons

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Introduction

The physical and commercial characteristics of cocoons are critical in determining their market value and quality. Physically, cocoon evaluation involves assessing attributes such as colour, shape, size, compactness, and surface irregularities. While colour is a racial trait and does not affect the reeling process, it can indicate the stifling and storage conditions of the cocoons. Shape and size, including compactness and hardness, provide insights into the quality and reelability of the silk. The presence of grains or wrinkles affects reeling efficiency and silk quality. Commercially, the weight of the cocoon is paramount as it correlates with the potential raw silk yield. The shell weight and shell ratio are significant because the shell directly contributes to silk production, with higher shell weights and ratios reflecting better silk yield. Additionally, the length of the silk filament, its denier, and the weight of reelable filament are crucial metrics in pricing. Renditta, the quantity of cocoons needed to produce one kilogram of raw silk, is a key factor in pricing, with lower values indicating higher quality. Reelability and the percentage of raw silk recovered from the cocoon also influence its commercial value. Understanding these characteristics is essential for fair pricing and quality assessment in the silk industry.

. These characters of a cocoon are used in the price fixation in the selling point

Physical characters:

1. Colour

- * This is a racial character
- * It is not influenced by the rearing conditions or the food
- * Colour is due to the presence of colouring pigments in the Sericin layer of the silk.
- * It is only superficial and is removed along with Sericin.
- * It does not influence reeling and therefore it is not important character to be considered for evaluation of quality.
- * Brightness of colour indicates that the cocoons are properly stifled and have not been stored for too long in storage.
- * Whereas dullness shows that the cocoons have either not been properly stifled and they have been stored for too long time.
- * White, greyish white, silver white, yellow and Golden yellow are some of the cocoons noticed in B. mori.
- * Indian races produce either white and yellow cocoons.

2. Shape of the Cocoons:

- * This is also a racial character
- * but influenced to some extent by the type of moutage and care taken in management of the cocoon at spinning stage.
- * In Indian market, round, oval, spindle and peanut shaped are encountered.
- * The shape of cocoons helps not only in discriminating the variety of cocoons but also in evaluating its reelability.

3. Size of cocoons:

- * Size of cocoon is generally indicated by the number of cocoon/litres.
- * Generally, the number varies between
- * 110 to 150 with uni and bi-voltine races
- * 300-400 cocoons in case of multi-voltine.

4. Compactness and Hardness:

- * This gives an idea of the silk content of the cocoon.
- * A good quality cocoon feels firm compact and slightly elastic (Resilient) between fingers.
- * A loosely built cocoon with poor reelability become compressed when pressed.

5. Grains or wrinkles:

- * The Wrinkles or irregularities on the surface of the cocoon are termed as grains.
- * They may be coarse or fine.
- * They are caused by conditions of rearing spinning cocoons with grains and wrinkles are not reeled easily.

COMMERCIAL CHARACTERS

- * Weight of the cocoons:
- * This is the most important commercial character of cocoon.
- * Prices are paid on the basis of weight.
- * Weight indicates approximate quantity of raw silk that can be reeled from it.
- * The quantity of cocoons used to produce one unit of raw silk is called Renditta
- * The price of cocoons is adjusted according to the estimated Renditta of cocoons under transaction.
- * Weight is also a racial character
- * Is influenced by rearing condition like quality of food etc.
- * Selling the cocoons too early in an attempt to have higher weight for the cocoons is not desirable because it increases their Renditta and decreases the selling price.
- * Therefore, it is necessary to sell the cocoon in the middle of pupal period to get optimum returns.
- * Delayed selling will result in lower returns as the weight of the cocoons will be reduced.

Weight of cocoon shell:

- More important than the cocoon weight because it is the shell that yields the silk. Hence larger the shell weight greater the silk yield from it.
- The average shell weight of commercial MV is 0.15-0.2g and that of UV and BV is 0.3 to 0.5g.

Shell ratio:

- Though entire cocoon with the pupa inside are marketed, only its shell is used for silk production. Therefore, cocoon shell ratio is assessed for fixing the price.
- Compared to the shell ratio of 15-25% of Japanese bivoltine; indigenous India pure MV race have only 10-12%.
- This has been improved to 13-17% in the newly evolved hybrid MV races. It is in the range of 18-23% in the commercial BV races.

Length of silk filament:

- This is measured by reeling silk thread from single cocoon on a single cocoon reeling machine called EPPROUVETTE.

- The average total length of the filament in a single cocoon is 300-400m for Indian MV hybrids and 800-1200m for Indian MV cross breed and 1000-1600m for Bivoltine cocoons.
- Denier is the Unit used to denote the thickness of silk filament.

Weight of Reelable filament:

- The entire length of the silk (bave) forming cocoon will not be available for reeling.
- The silk of the floss layer is coarse and entangled.
- The inner most pelage layer is too thin and weak which can't be reeled and therefore removed.
- Considering these inevitable wastages, the actual weight and length of silk available for reeling raw silk will be less than whole weight of the silk shell.
- About 80-90% of silk in the cocoon can be recovered in single cocoon reeling at slow winding speed
- But, the % age is considerably less in commercial reeling.

Renditta:

- The number or kilograms or quantity of cocoons required to obtain 1 kg of Raw silk is called Renditta.
- It is the important commercial character to be considered by the Reeler before purchasing the cocoons in the cocoon market.
- Renditta value of MV is 8 to 14 while bivoltines is 6 to 8.

Filament Denier:

- It is the weight of 9000 m length of silk expressed in gms.
- The size of silk is higher at the beginning of the filament than the silk in the middle and inner layers.
- The pelage layer has the thinnest and lowest denier.
- Value of denier varies from 1.7 to 2.8 gms.

Reelability:

- The percentage ratio of unbroken filament to the whole filament length represent the reelability of cocoons.
- MV have poor reelability compared to BV.

Raw silk percentage:

- The ultimate percentage of the quantity of Raw silk reeled in relation to the quantity of fresh cocoons utilized for reeling it.

Defective Cocoons:

- The percentage and type of defective cocoons encountered in the lot are also taken into consideration in the Price fixation.

Conclusion:

The physical and commercial characteristics of cocoons are crucial for determining their market value and quality. Physically, attributes such as colour, shape, size, compactness, and surface irregularities impact silk quality and reeling efficiency. Commercially, weight, shell weight, shell ratio, filament length, denier and reelable filament are key factors in pricing. Renditta, which measures the quantity of cocoons needed for one kilogram of raw silk and reelability further influence the cocoon's commercial value. Accurate assessment of these characteristics ensures fair pricing and optimal returns in the silk industry, highlighting the importance of thorough evaluation in the market.

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