ISSN: 2350-0328
International Journal of Advanced Research in Science, Engineering and Technology
Vol. 7, Issue 9 , September 2020

Analysis of Quality Indicators and Yield of Raw Silk of Silkworms of Different Breeds Grown in Local Conditions

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ABSTRACT: Various breeds of locally bred silkworms have been produced, such as Musafo tola-2, Navruz-3, Navruz-4, and Chini breeds, the origin of which was determined during the production of raw silk. In addition, the silkiness, the total length of the cocoon yarn, the volume of continuous weaving, the linear densities are given.

KEY WORDS: Silk, Silkworms, Musafo tola-2, Navruz-3, Navruz-4,, indicator, text, direction.

I. INTRODUCTION

The silk industry is one of the main branches of light industry, one of the most valuable raw materials for employment and production of various products in the country.

The goal of silk is to produce a single, complex, linear-density raw silk yarn that is continuous in length and thickness by joining and gluing several cocoons together. The cocoon is made up of two long and thin threads joined together (glued) and has the shape of a crushed cylinder. The silk is mostly parallel and the surface of the yarn is covered with a layer of flat sericin.

The formation of the raw silk process is carried out by combining individual cocoon yarns from the cocoon shell into a complex yarn and drying it in a collection cabinet. All these processes are carried out through various levels of mechanization and automation of technological processes. Selection of raw cocoons, their calibration, sorting of industrial groups in order to create uniform cocoons are the features of the technological process of raw silk production. It also involves softening the sericin layer in the cocoon shell by steaming, locating and cleaning the cocoon ends and rinsing them in water under certain conditions, drying the complex yarns, and wrapping them in a collection device after forming. [1, 2,].

II. ANALYSIS OF EXISTING FILTERING MATERIALS AND RESEARCH RESULTS

The quality of raw silk depends on each stage of the cocoon spinning process.

To analyze the available resources for the study of the formation of raw silk defects, they can be divided into several groups:

- works related to the selection of cocoon raw materials, the quality of the cocoon;
- preparation of cocoons for washing, ie formation of industrial batches;
- evaporation of cocoons, search and cleaning of cocoon ends to reduce the strength of adhesion in the cocoon shell;
- spinning of cocoons and obtaining a flat raw silk of the thickness corresponding to the given assortment;
- accurate use of the mechanism and transmissions of the cocoon washing machine;
- Drying of raw silk yarn during its formation and assembly in the package.

These issues determine the implementation of technological and technical regulations for the production of high-quality raw silk.

Our and foreign literature pays a lot of attention to these areas. The selection of the same batch of cocoons for cocoon washing, preparation of cocoons for cooking, improvement of cooking and shaking have been thoroughly

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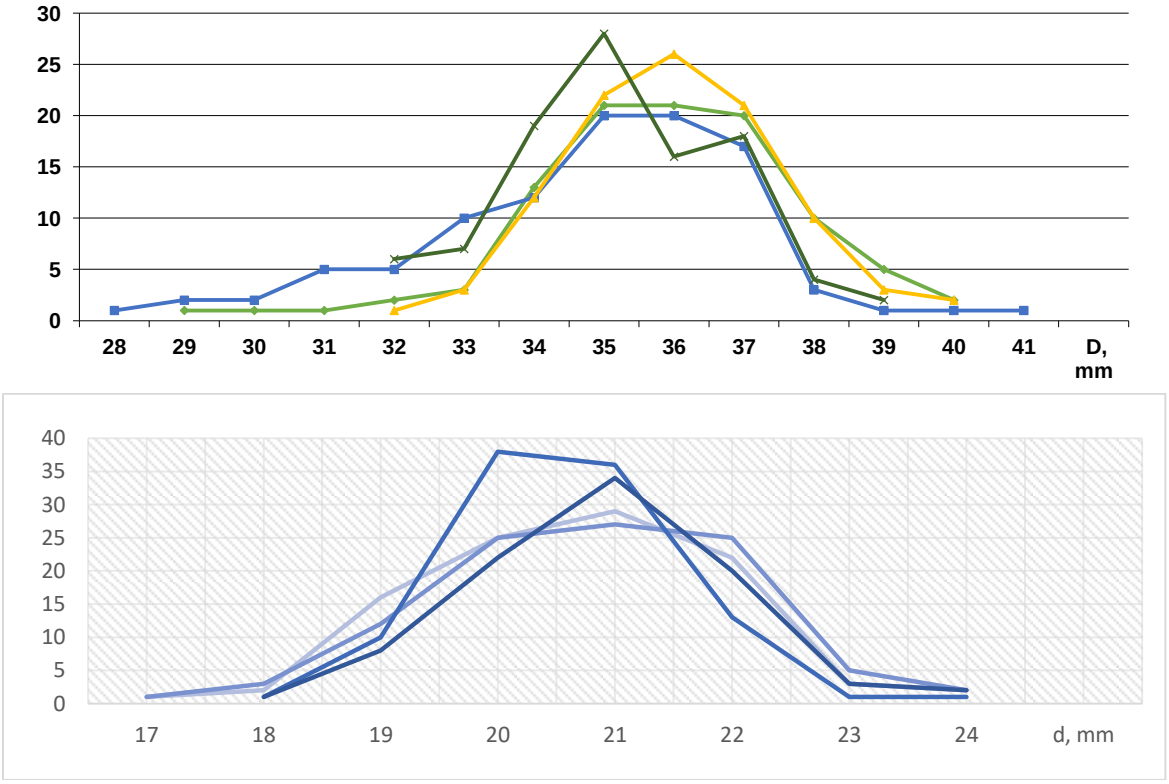
studied. The main quality indicators of raw silk are the defects of raw silk. Raw silk swellings, mustaches, scars, etc. are characteristic of the defect. The causes of defects are very diverse and depend on the technological regulations and the operation of the equipment, as well as on the cocoon itself [3].

III. CONCLUSION AND FUTURE WORK

The geometric features of the cocoon depend on the silkworm breed, the hybrid, the sex, the feeding conditions, and the type and size of the cocoons. The shape of the cocoon is characterized by a coefficient of degree of curvature and thinning.

The cocoons are calibrated to size. If it is up to 16 mm, it is divided into small caliber, 16-19 mm medium caliber, 19-22 mm large caliber, and above 22 mm very large caliber. In our study, we aimed to study the calibers of Mayin tola- 1, Navruz-3,4 and Chini hybrids.

The size distribution of the cocoons is shown in Figure 1.



Musafo tola-2; Distribution of Navruz-3-4 and Chinese hybrid cocoons by size

After the cocoons are calibrated, the evaporation process takes place.

The essence of this work is to improve the evaporation (softening of the sericin), to develop new techniques, to correct the strength of the yarn from the shell along its length, and to prevent large and small defects in the yarn. leads to supply.

There is also interest in the study of a number of issues that affect the adhesion of yarn and the reduction of thread breakage, as well as their drying during the assembly process in the outgoing package.

The physico-mechanical and technological properties of raw silk are determined to a certain extent by the mode and conditions of cocooning, the formation of complex yarn, its drying and packaging. The most common packaging for raw silk is wheels of various parameters, which provide construction to the end and a certain loss of residual tension in the yarn.

The reason for the decrease in the physical, mechanical and technological properties of raw silk is that the yarn is wound on the wheel in a wet and stressed state. Researchers around the world have been working to solve this

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International Journal of Advanced Research in Science, Engineering and Technology
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problem for many years. A promising area for improving the method of collecting raw silk is the separation of drying into a separate technological process, which causes the yarn to be wrapped in the empty state, and processing of raw silk yarns after unraveling to solve the internal tension of the yarn.

Of particular interest in the experimental research group on the drying processes of raw silk in cocoons is a study of the possibilities of improving the quality of raw silk and overcoming the causes of its decline.

The decline in the quality of raw silk is primarily due to the fact that the complex yarn has high breaks. The break in the rewinding of raw silk from the yarn to the spool is mainly due to defects in the appearance of the yarn. In this case, 50 % of all rings are due to the adhesion of the threads.

The adhesion of the yarns (interlocking of the silk threads) is caused by the dense placement of the threads in the wet state and partial deformation when they dry.

Raw silk comes out of the cocoon powder with more than 200 % water, and when wrapped in a cocoon, its moisture content decreases by 110-112 %. The high residual moisture of raw silk makes it necessary for intensive and continuous drying in the drying cabinet.

To lose this amount of moisture (103-105%), convective drying is used to maintain an average temperature of 48-50 0C in the drying cabinet.

The drying process is complicated by the layered wrapping of the raw silk and the transfer of moisture from the previously dried inner layers of the yarn [3,4].

Analyzing the structural changes in the raw silk under stress, it was noted that the breakage in complex yarns occurs in individual silk yarns and the surface of the yarns appears to be suspended under a load of 30-35 sN. To reduce the total tension of the yarns in cocoon spinning machines, the author recommends reducing the initial tension components and thereby reducing the total load. To do this, we used a pneumomechanical method to reduce the tension of the yarn by forcibly rotating the two-stage pulley of the control unit on our cocooning machines.

Many researchers have studied and are working on the problem of obtaining raw silk with low linear density. It is known that raw silk yarns with thin sections do not withstand the increase in load and breakage occurs.

In most cases, the number of threads will increase continuously from the beginning to the end. Accordingly, the unevenness of the raw silk yarn depends on the number of cocoons in the "bundle", the length of the continuous spinning of the cocoon, and the unevenness of the length of the cocoon threads.

It should be noted that today's industrial elephants are different from the older generation and hybrids.

The total length of the cocoon has changed, and the length of the continuous weave has increased.

The thickness of the cocoon did not change significantly and was not comparable to that of imported cocoons.

As a result, there are changes in the new generation of mulberry silkworm cocoons. Therefore, it can be concluded that the technological characteristics of raw materials may also change.

Table 1

Comparative indicators of technological features of industrial cocoons

t / r	Name of indicators	For 2018			For 2019			For the year 2020		
		Musafo tola-2	Navruz-3-4	China	Musafo tola-2	Navruz -3-4	China	Musafo tola-2	Navruz -3-4	China
1	*Silk, %*	*50,0*	*50,0*	*48,7*	*51,2*	*51,9*	*49,4*	*52,8*	*52,0*	*50,0*
2	*The total length of the cocoon, m*	*1460*	*1345*	*1300*	*1468*	*1380*	*1365*	*1482*	*1365*	*1405*
3	*Continuous washing length,m*	*658*	*512*	*485*	*675*	*550*	*512*	*775*	*601*	*504*
4	*Linear density, Nomer, N Tex, T*	*2924 0,342*	*3448 0,290*	*3448 0,290*	*3127 0,319*	*3560 0,280*	*3560 0,280*	*3220 0,311*	*3580 0,279*	*3580 0,279*

The information given in the table above was sorted in the laboratory, and the work of spinning cocoons and raw silk was carried out in the training laboratory of the department of "Silk Technology".

Raw silk was obtained from cocoons and the length of raw silk was studied by breed and hybrid, and the results obtained in the graph are given below.

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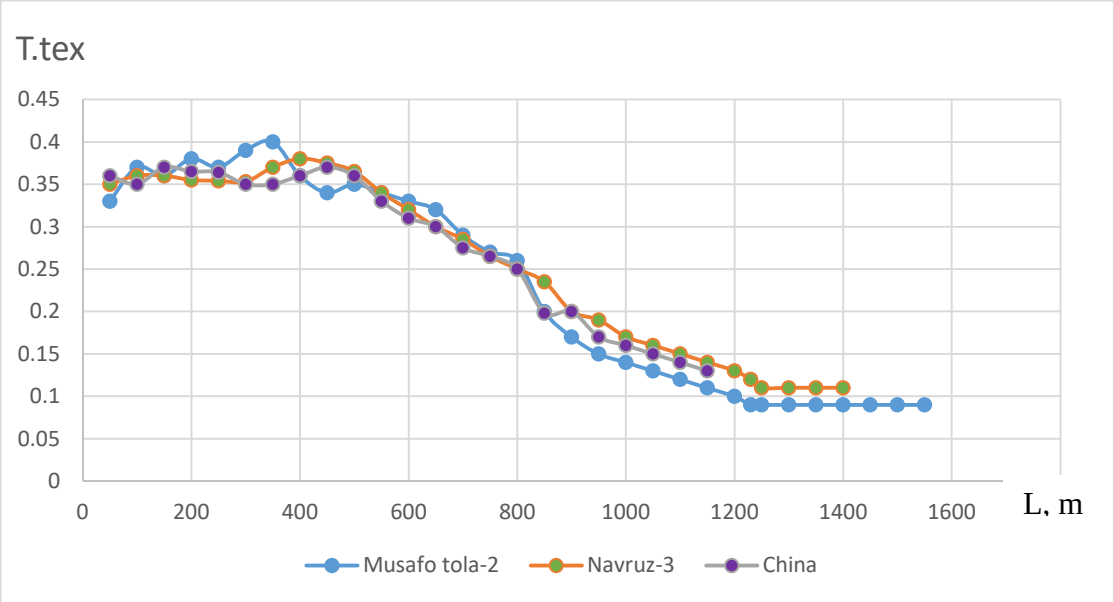

As we can see from the graph below, it is expedient to solve the following problems. These are:
- study of changes in the plane of the cocoon, its linear density along its length;
- the condition of the continuous weaving length of the cocoon;
- changes in the structure of the yarn and its effect on defects.

Conclusion: Based on the above, it is recommended that this work be a comprehensive study of theoretical and practical issues, using modern hybrids and pedigree cocoons in comparison with foreign ones.

From the results we can see that the local breeds get good raw silk, as well as the caliber of the cocoons is medium and large. the possibility of obtaining raw silk in one text in terms of quantity increase and linear density was found. Based on the results obtained, we can see that the quality indicators of local native cocoons are good.

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