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Study of the Properties of Fibers Obtained From Mulberry Fiber

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ABSTRACT: The article investigated the possibility of isolating best fibers from mulberry branches and determined the fiber yield. The geometrical properties of the separated best fibers are investigated, it is revealed that the length of the elementary fibers varies from 3 mm to 32 mm, and the linear density varies from 0.21 to 0.18 tex. One cyclic strain strain and compression strain of separated best fibers from the thick part of annual mulberry tree branches are investigated, which opens up promising opportunities for the effective use of fiber as a natural raw material.

KEY WORDS: Mulberry best fiber, tree bark, fiber length, fiber thickness, fiber deformation.

I. INTRODUCTION

In our country, attention to the further development of the silk and textile industry, the attraction of advanced technologies in this area, the introduction of innovations in the field of science give remarkable results. The Decree of the President of the Republic of Uzbekistan "On measures for the creation of the Association "Uzbekipaksanoat" dated March 29 of this year is a program of actions in this direction. The resolution provides for the accelerated development of the food base to enhance the prestige of the industry, the creation of a high-quality silkworm breeding system, the production of industrial raw materials and the full-scale operation of cocoon processing enterprises, as well as specific measures for the production of competitive products and the export potential of the industry. As a result, by 2021, an increase in the share of cocoon processing to 50%, the creation of new jobs and an increase in foreign exchange earnings through the export of products by 2021 are envisaged. [1]

One of the leading directions of sericulture is its development, which depends on the feeding of the mulberry tree of the silkworm. Creeping plantations are being built to strengthen the forage base of the silkworm in the main agricultural areas. The leafy hooks of the mulberry cut each season as food for the silkworm. The hawthorn body is thick, wooden, and cylindrical and the main horn is thick. The lining of the blade consists of three layers: the bark, the tree and the core. [3] The important task is to separate the thickness of the multicolored mulberry tree, which was cut by feeding the silkworm and the elongation of textile fibers.

Object of research and methodology. The object of the study was the study of lubricant fibers extracted from the bark of the mulberry tree, their geometric properties, deformation of tension and compression by using a statistical method.

II. ANALYSIS OF EXISTING FILTERING MATERIALS AND RESEARCH RESULTS

Results and their analysis. Due to the fact that the country uses local worms and a large number of white mulberry varieties, these mulberry branches were chosen as the object of study. First of all, it was determined how many leaves leaves the branch of a tree, and how many branches remain. Studies have been conducted on newly cut mulberry branches. On average, it was found that 37% of the leaves were in each branch. Therefore, since the leaf is used as feed, 63% of branches remain. Moreover, branches are made of wood and surrounding bark. The determination of their size indicates that the hollow part of the branch is on average 19.3%.

The main cell of lamellar cells is cellulose, which gives the fiber elasticity. To separate the fibers, you first need to clean and remove the lubricant before the fibers stick. In our study, we cut mulberry horns in several variants and cut the fibers. This was done in the following sequence: the cut branches were burned; the fibrous part of the

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branch was cut off. The results showed that it would take 28 days after the departure of the bark a normal water-dried branch. With chemicals, recovery time was reduced by 42%, and the color of the extracted fiber was bright. The removed wool fiber was 16.3%.

The geometric properties of textile fibers and threads are their length and thickness. The length and thickness of the fibers directly affect the properties of the yarn. Density is one of the necessary indicators for the use of yarn and thread. The length is an important indicator for the fiber, since the yarn spinning system is chosen relative to the length of the fibers.

In order to determine the average arithmetic length of the fibers obtained, the distance between each of the fibers in the sample mass and the distance between the two scales and the fiber cord were measured. After measuring all the fibers, the fibers were divided into groups with a specific length and quantity. The arithmetic average length was calculated by the number and length of fibers in each group.

III. LITERATURE SURVEY

Methods of statistical control have many options, the choice of the optimal determines the effectiveness of the control. Most modern methods of statistical control are designed to obtain reliable results with minimal labor costs for measurement and testing, as well as for computational work. The most developed and commonly used method is the arithmetic mean and range, in which two statistical characteristics, the arithmetic average and the variation range of the monitored product quality parameter, are determined on the basis of a sample measurement or test. Identified values are entered in control charts. If the first and second diagrams of the quality parameters are located outside the control limits, this signals a change in technological processes for the worse. Then the controller is obliged to warn technologists about the need to improve the process, and check the entire batch of products.

OTC evaluates the results of the work of technological processes in accordance with the control technology, the results of statistical control and determines the main measures to ensure product quality.

Thickness unevenness is one of the main indicators that determine the quality of yarn.

The coefficient of variation is the main indicator of unevenness, the numerical value of which is standardized, but it does not reveal the nature of unevenness.

The quality of textile products largely depends on the uniformity in terms of quality indicators of the yarn produced. High irregularity of yarn leads to a decrease in the relative breaking load of the yarn, thus, for fabrics produced from these yarns, the indicator for breaking load will not meet the regulatory requirements of the standard.

One of the causes of unevenness is the inconstant quantitative ratio of the constituent components and their uneven mixing.

The increased non-uniformity of the yarn reduces the use of the strength of the fibers in the yarn, as a result of which the mechanical properties of the yarn are deteriorated and their breakage is increased in weaving and knitting.

IV. EXPERIMENTAL RESULTS

The fibers were divided according to the diameter of the branches of the trees. That is, the starting point of the branch has a diameter of more than 15 mm, and the diameter of the tip of the branch is less than 15 mm. When the submandibular fibers are under a microscope, the tip of the elementary fiber is a closed loop with a gap between the gaps, and in some parts of the cavity there are bulges. Fibers with a diameter of less than 15 mm were less spaced. The results showed that the length of the elongated elementary fiber was 3-15 millimeters, and the fibers from small branches were 10-32 millimeters. Linear folio density was typically 0.12-0.18 tex. The twisting of textile fibers is one of the most important indicators. Due to its fibers, elasticity increases (Table 2).

Table 1

Indicators	Fibers extracted from thick branches	Fibers extracted from thin branches
Elementary fiber length, mm	10-32	3-15
Linear fiber density, tex	0,14-0,18	0,12-0,15
Fiber strength, gr	15	9

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Fiber expansion, %	5	3

Fibrous fibers are not suitable for spinning; therefore, when combined with each other, there may be no slip. The clarification is characterized by the following indicators: rotation number, degree of rotation, stagnation.
When calculating the number of turns, the number of torsions per 1 cm is calculated using a microscope, and the arithmetic average is calculated by calculations.

The rotational speed is determined by the difference between the corrected fiber and the length of the fibers, which are not corrected for:

During the study, fibers that were divided by diameter were observed under a microscope and the number of rotations per 1 cm was determined. The results showed that the rotation of the fibers from the horns was on average about 4-6 per 1 cm, and the elasticity of the fibers from the small horns ranged from 7 -8 cm to 1 cm. This indicates that the elasticity of the fibers is closely related to thickness. Since the linear density of the fibers in the thick branches was 0.14-0.18 tex, the number of rotations was 4-6, while the linear density of fine-grained fibers was 0.12-0.15, and the number of rotations was 7-8. However, it should be noted that, although the thinner part of the horn of the tree is large and thin, it is less likely to reduce the possibility of the formation of thin filaments.

Textile fibers, yarn and rubbing of their products are quickly exposed to force, and then rest. During this period, the analysis of physical and mechanical properties of materials is of great importance. A single full-length deformation consists of three parts: elastic, flexible, plastic deformation. When the external force of the fiber affects the formation of brittle deformation, the distance between the particles of the fibrous material changes slightly and the energy of the fiber accumulates. The appearance of tuna does not change. Deformation of the cortex is very fast. When the external force of the fiber affects the elastic deformation, the particles of the fibrous material are removed for a long distance. The appearance of the polymers varies. This change occurs over a period of time. The gravitational force of the molecules of the molecules is in equilibrium with the acting force, the process of semi-relaxation occurs. The relaxation of the fibers in the strand structure depends on the environmental parameters. When the external force of the fiber affects the elastic deformation, the particles of the fibrous material will not move too far. Therefore, this deformation is called irretrievable residual deformation. We collected all the fiber deformation obtained in our studies (Table 2).

Table 2

Fiber	Full deformation, %	Parts		
		resilient	elastic	plastic
Bast fiber	4,3	0,26	0,24	0,59

If the oblique and elastic deformation of textile yarns is large, the yarn will be slightly crushed and higher. Therefore, highly deformable materials are used to turn garments. During the production of textiles, they are compressed between different shells, and the fabric destroys the kneading deformation when the threads are welded together. Compression deformation is also studied in three phases: half-period, single-phase and multi-stage deformation. Determination of the height or size of the fibrous layer in the compression chamber. The yarn can be damaged by bending with a radius of 80-90 microns. The strength of the resulting lubricant fibers was determined. It was 120 - it's twice as high as cotton fiber.
From this we can conclude that the textile industry has the ability to effectively use high-density yarn as a natural raw material from the annual hornblende fibers.

V. CONCLUSION AND FUTURE WORK

Conclusion: we sought to investigate the removal of fibers from mulberry and found that the amount of lubricants was 16.3%. Geometric properties of the obtained fibers were determined from 3 mm to 32 mm, linear density from 0.12 to 0.18 texts. The study of stretch deformation and compression deformation allowed the efficient use of fibers from the annual branch of the mulberry tree as a natural raw material in the textile industry.

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REFERENCES

1. Tuerxun, D., Pulingam, T., Nordin, N.I., Leo, B.F.,Johan, M.R.B. Synthesis, characterization and cytotoxicity studies of nanocrystalline cellulose from the production waste of rubber-wood and kenaf-bast fibers. European Polymer Journal 116, pp. 352-360. 2019 y.
2. Yu, H., Hou, J., Yu, S., Jiang, J., Nie, S. Comprehensive understanding of the non-productive adsorption of cellulolytic enzymes onto lignins isolated from furfural residues. Cellulose 26(5), pp. 3111-3125. 2019 y.
3. Sericulture Technologies Develored by CSRTI Mysore Dr.Bharat B.Bindroo.Dr.Satish Verma.Dated:17 th March 2014 y.
4. Kukin G.N., Soloviev A.N. "Textile Materials" (Original textile materials) –M "Legprombytizdat", 1985.