

Improving Product Quality in the Silkworm Industry Based on the Requirements of a Standardized Quality Management System

Sh. A. Sulaymanov

Associate professor, Andijan State Technical Institute

Qobiljonova Sitora Erkinjon qizi

Master of Standardization and Quality Management

Annatation:

This article discusses the impact of the introduction of a standardized quality management system on the activities of the silk industry. The authors conducted scientific research to improve the products and processes produced at the enterprises of the sericulture industry in the Republic of Uzbekistan in 2024.

Purpose. The main purpose and issue of the study is to determine the impact of standardized quality management systems on the activities of the silk industry. The research process and analysis of the obtained results allow us to comment on research issues and know: the main conditions for the implementation of quality management systems for enterprises of the sericulture industry are improving the quality of products, introducing a standardized quality management system into the production process system, improving the processes of statistical analysis of products and customer management factors. Standardized quality management systems have a huge impact on the improvement of the main processes and systems in the silk industry.

Our republic is aimed at obtaining high-quality silk from local secondary raw materials by modifying factors based on surfactants that create defects in the storage of cocoon raw materials, which is important for the textile industry. In order to improve the processes of storage and bathing of cocoons and increase the amount of raw silk obtained from them, he recommended treatment with chemicals

Methods. Experiments were carried out in the main cocoons of the Andijan, Asakin and Khuzhaabad regions of the Andijan region. As a result of the research, waste from the Biochemistry plant (bardo and sivush oil), a surfactant (SPM) synthesized in laboratory conditions were used. Prior to the pre-treatment of the cocoons, the cocoon modification process with new chemicals (SPM) was carried out. The produced SPMs contain hydroxyl, carboxyl groups close to the substances contained therein. The environment of the substance is neutral and non-toxic, at the same time there are amino groups in it that do not absorb cortical traces and insects. Employees of the sericulture enterprise do not have a negative impact on health.

Results. An increase in silk yield from 28-29% to 42-45% and in the total volume of dry cocoons from 81-88% to 95-96% was achieved due to the rational use of the production capacities of sericulture and sericulture enterprises and the modification of surfactants in improving their stable operation and improving the quality of cocoons. Modification of cocoons by reducing the factors that cause defects in the storage of cocoons made it possible to increase the wear of cocoons by

2.8-3.04%.

Inference. Based on the results obtained, it is advisable to use local secondary raw materials when eliminating defective factors in the storage of cocoon raw materials using surfactants obtained by synthesizing waste from the Biochemistry plant.

Keywords: SMT, quality, management, enterprise, industry, system, process, improvement, product, improvement, statistical analysis, cocoons, silk oil, bardo, sivush, surfactant, chuvish, raw silk.



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Introduction. Our republic occupies a leading position in the region in the cultivation of raw materials, such as cotton, natural silk, hemp, wool, which are important for the textile industry, plays an important role in the economy and meeting the needs of the population. In addition, the manufactured products are used for technical purposes in other industries.

[1]. As the President of our country noted, it is necessary to export to the foreign market not cheap raw materials, but high-quality commercial products. To expand the export potential, it is necessary to develop joint ventures for the production of finished products based on the processing of valuable raw materials. Together with foreign partners, it is necessary to create modern compact enterprises and bring them closer to the village, which is a source of labor resources [2].

In particular, the silk industry is one of the largest industries in the Republic of Uzbekistan, occupying a leading position in the world in the cultivation and processing of cocoons. It follows from this that these sectoral products create a large source of exports for independent Uzbekistan.

further deepening economic reforms in the silk industry, creating favorable conditions for the modernization of enterprises and the creation of new industries in the structure of the silk industry of the republic, on measures to organize the activities of the Association "Uzbekipaksanoat" and dated July 31, 2019 No. PK-4411 "On additional measures for the development of deep processing in the silk industry" in order to increase the volume and expand the range of finished products competitive in the world market "[3] scientific approach to the implementation of the tasks defined in legal acts.

Sericulture enterprises are forced to take more and more measures to improve efficiency and introduce innovative solutions in order to make their products of high quality. Dear President of our country in the State Program for the Implementation of the Development Strategy of the New Uzbekistan for 2022-2026 is aimed at the development of the textile industry, which is aimed at reducing losses in the industry and increasing the efficiency of resource use. As a result of the relevance of quality management and standardization issues in the export of products manufactured in Uzbekistan and its high rating in foreign markets, an integrated approach to the existing enterprise management system is required to ensure product quality [4]. The relevance of improving standardized quality management systems at the enterprises of the silk industry is explained by the fact that they are aimed at improving the quality of products and services through the introduction of modern advanced quality tools and methods in recent years. The standardized quality management system is an important tool for the economic development of the sericulture industry, the improvement of the standardized quality management system directly affects the improvement of the efficiency of the sericulture industry and leads to the optimization of production costs. Improvement of the standardized quality management system is one of the most important criteria for evaluating enterprises [5]. To ensure the production of high-quality products

that meet modern requirements, first of all, it is necessary to determine the activities and processes, the system of mutual influence on the enterprises of the silk industry, the tasks of the relevant management bodies. Continuous improvement of each quality management system process will bring success to enterprises. Ensuring the planned level of product quality with measures to assess, develop, select and implement the actual level of demand for products, a process that includes ensuring the management and identification of product quality in the silk industry [6].

Currently, cocoons are stored in the warehouses of sericulture enterprises to ensure uninterrupted operation of sericulture enterprises. Externally, this is considered simple, but very important for technological processes. Because as a result of the storage of cocoons under the influence of the environment, metrological conditions and various insects, various factors, the structure of the cocoon layer is destroyed, the layers of yarn are damaged, and sericin is worn out. Experiments have shown that with a shelf life of more than 11-12 months, the yield of raw silk decreases by 6.5%, the viscosity - by 7.1%, while the release of moose during the crushing of cocoons increases by 1.6%, and the release - by 1.3%. As a result of long-term storage, cocoons are exposed to various insects and rodents. The appearance of skin is caused by environmental pollution. When one of the cocoon pests called *An Aremus Slavipes* [7] is studied in silkworm warehouses, it has an oval shape with white, yellow and black spots on the body. They not only destroy cocoons, but also penetrate the bundle of silkworm, turning it into a powder, and over time harm the shell.

It was found that the "origin and reproduction of cocoons" causes great damage to sericulture, which is formed only at primary processing bases and warehouses of enterprises. The skin develops in rotting umbra waste or in rooms cleaned of defective cocoons, bird nests and their waste. It turned out that when checking 11 breeds, *Dermester Yandarius*, *O. Masulatus* and *Sriski* are especially dangerous for sericulture. The *Dermester*-type worms nest and nest, sucking the building and tiny bits of fat. There he flies first to Umbak, then to the tail. Cases of rodents were also found in concrete and twine parts of buildings [4,8].

Methods. To protect cocoons from pests in sericulture and sericulture, first of all, in protective institutions and cocoon harvesting points, a warehouse and sheds must be repaired before accepting a new crop, holes and cracks must be closed. All cocoon storage areas shall be disinfected with 80% technical chlorophos (1.9-2.3 g/m²) or 50% carboxyl chemical solution (1.5-2 g/m²) or 50% chemical solution. But these solutions should be made on special mechanically equipped machines, and in manual sprayers OXV - 14 or OVX - 28, EVS - 3 - on the day of solution preparation. Currently, due to the small number of these chemicals, given their delivery, work in this direction remains incomplete.

According to scientific data, if a substance contains a group of amines, then it does not contain such substances.

In research work to protect cocoons from various pests, we used waste from the Biochemistry plant (bardo and sivush oil), a surfactant (SPM) synthesized in laboratory conditions. The produced SPMs contain hydroxyl, carboxyl groups close to the substances contained therein. The environment of the substance is neutral and non-toxic, at the same time there are amino groups in it that do not absorb cortical traces and insects. Employees of the sericulture enterprise do not have a negative impact on health.

Results. Experiments were carried out in the main cocoons of the Andijan, Asakin and Khojaabad regions of the Andijan region. Prior to the pre-treatment of the cocoons, the cocoon modification process with new chemicals (SPM) was carried out. Dried cocoons of 30 kg each are packed in bags and sent for storage to the warehouses of the sericulture enterprise.

Cocoons sent for the experiment were stored in the warehouses of the sericulture enterprise of Harir Tola LLC, located in the Khojaabad region, for 11-12 months.

As a result of the study, it was found that in comparison with the control in experimental versions, damage to cocoons under the influence of chemicals is 60-67% less than traces.

Due to the modification of cocoons treated with chemicals (SPM), by 2.8-3.04%, an increase in cocooning of cocoons by quarters was achieved due to their preservation by 5 kg.

Discussions. To ensure uninterrupted operation of sericulture enterprises, cocoons are stored in the warehouses of sericulture enterprises. Externally, this is considered simple, but very important for technological processes. To prevent the destruction of the structure of the cocoon layer under the influence of various factors as a result of the storage of cocoon raw materials, scientists of the region L.Yu. Yunusov, Kh.A. Aliyeva, A.O.B. Widely covered in the works of Akhriddinov, N.M. Islombekova and others [5,6,7,8,9]

Therefore, the quality indicators of cocoons grown in our republic do not fully meet the requirements of sericulture enterprises. Because in our republic 10 12 kg and more live cocoons 10 are spent on obtaining 1 kg of raw silk.

In industrial cocoons grown in China and India, the share of unsuitable cocoons for bathing is 3-5%, the yield of raw silk is 42-44%, most cocoons are cocoons of average size 95-98%, and based on these indicators, the quality of raw silk is ensured 11. In our republic, the share of cocoons not suitable for bathing is 25-30%, and the yield of raw silk from cocoons is 26-29% 12.

The external environment greatly affects the viability of the silkworm, its productivity, the growth of cocoons, the quality of the cocoons grown and the technological features of silkworm 13, given this, they recommended eliminating the shortcomings in the storage of the silkworm.

Conclusions. It is based on the rational use of the production capacities of sericulture enterprises and the improvement of their sustainable operation, first of all, increasing the quality of silkworm cocoons from 28-29% to 42-45% and in the total volume of dry cocoons from 81-88% to 95-96%.

Waste from the Biochemistry plant with maximum use of cocoons grown in the republic. - modification of cocoons before the primary processing process with new SPMs synthesized on the basis of residual bardo fraction and fusel oil, with simultaneous increase in cocoon wear by 2.8 - 3.04% due to reduction of defects in their storage using principles and methods. It has been established that these methods are important in ensuring high quality and promotion of raw silk, it is advisable to take into account the following indicators:

Ethics and finance: Determining the type and quality of cocoons. To obtain quality raw materials, it is important to obtain raw materials from qualified local farmers.

Family reforms for women: To ensure the stability of silk production, women should actively study modern technologies.

Control process: control of efficiency of raw silk production. Avoiding poor quality silk or threads.

Storage conditions: Temperature and humidity control. Ensure proper storage environment for raw silk (strong yard, necessary ventilation).

Technology recovery: Application of modern methods, for example, automated and innovative systems.

Quality control: Systematic control in the production process, i.e. laboratory tests and visual evaluation.

Cancellation system: Identification of products that reduce quality, their processing or cancellation.

Training and advanced training: advanced training of employees, explaining to them the forms, periods and qualities of raw silk.

Compliance with international standards: organization of activities based on ISO and other international standards, implementation of the certification process.

Environmental and social responsibility: Taking into account environmental and social issues at work, improving the social status of women.

These methods will help you get high-quality silk products and ensure their competitiveness in the market.

Literature used.

1. Alimova HA, Akhunbabaev OA, Gulamov A.E. Waterless technology for the production and processing of natural fiber .//Significant integration of science and solutions to pressing problems in organizing the production and production of the textile industry: Tez.dok.mejd.nauch. pack. conf. July 27-28, 2017 - Margilon 2017. Frequency 1. -C. 13-17.
2. On measures to organize the activities of the Uzbekpaksanoat association: PK-4411 Decree of the President of the Republic of Uzbekistan of July 31, 2019.
3. Sulaimonov Sharifjon Abdumanabovich Methods of protecting dry cocoon bark from dust and other factors using chemicals Oriental renaissance journal: Innovative, educational, natural and social sciences 2021/5 No. 4 1120-1127 c, www.oriens.uz
4. R Alisher, S Sharifjon, R Akmal Study of the Influence of Silkworm Feeding Conditions on the Quality of Cocoons and Properties of the Cocoon Shell. J. engineering, Scientific Reserch Publishing № 11 2019. 755-758 p.
5. Suleymanov Sh. A. Primeniye ximicheskix preparatov, izgotovlennyx iz otxodov bioximicheskogo zavoda pri proizvodstve kokonov//Bulletin of Science and Practice. 2019. VOL. 5. №3. S. 168-172. <https://doi.org/10.33619/2414-2948/40/22>.
6. Sulaimonov SH, Muminov U, Zhamoldinov SH Izuchenie sostoyaniya ispolzovaniya vata-sdira i puti popisheniya kachestva kokonnogo sirya//Universum: Texnicheskiye nauki: elektron. Scientific. yurn. 2019. № 7(64). URL: <http://7universum.com/ru/tech/archive/item/7667>
7. Rakhimov A. Yu., Rakhimov A. A., Sulaimanov Sh. A. METHODS OF OPEN WASTE OF SERICULTURE VATI-SDIRA//Collection of scientific works of the International Scientific Conference, acting on the 110th anniversary of the birth of Professor AG Sevostyanov. – 2020. - FROM 135-1378.
8. Khalmatov Muslimdin Mukhammatovich Ismailkhodzhaev Bokhodzha Sharibkhodzha Sulaimonov Sharifjon Abdumanabovich, L.S. (2019). The Influence of Harmful Substances on the Pigments of Leaves of Decorative Trees. Annual Research & Review in Biology, 1-5.
9. Bakhriddinov A. The food base is the main factor in increasing the efficiency of the silk industry .//Zooveterinaria. T.: 2014. №11. B.34-35.
10. Islanbekova N.M. Influence the grain of cocoons on the technological indicators of unwinding .//J. Textile Problems No. 1, 2010. 23 25 pp.
11. Akhunbabaev O.A., Mirzakhonov M.M., Valiev G.N., Mukhamdrasulov Sh. Kh., Akhunbabaev U.O. Solution of urgent problems of science integration when organizing

- production at textile industry enterprises .//Quickly. doc. people. science. action. conf. materials. July 27-28, 2017 - Margilon 2017. Part 1. -C. 102-109.
12. Shintoku K. Samarali yordam ko'rsatadi .//Sansi kagaku to gidzyuni. -1986. -T.25. -№12. -C. 63.
 13. Legenko O.B. Sericulture China .//J. Silk. Express information. 1983.
 14. Boltaboev D. Centralized feeding and production .//J. Silk. -1970. -№1. -S.8.
 15. Remidovsky Yu.M., Tajiev E.Kh., Mirzakhodzhaev A.M. Sericulture in Japan .//J. Silk. -1980. -№2. -S.29.
 16. Rakhimov A.Yu. "The main processing technologies in spinning cotton wool are with industrial cones." Dissertation candidate of technical sciences.T.: TTESI, 1994
 17. Rakhimov A.Yu., Sulaimanov S.A., Rakhimov A.A. Operation of an artificial cocoon in the process of curling a silkworm cocoon .//J. Aspirantlar va doktorantlarning ilmiy nashrlari. - 2015. -№4. - S. 160-161. Kursk.
 18. Rakhimov A.Yu., Abdurakhmanov A.A., Sulaimanov S.A. Izuchenie sostoyaniya ispolzovaniya vatu-stira i puti povisheniya kachestva kokonnogo sirya .//J. Aspirantlar va doktorantlarning ilmiy nashrlari. -2015. -№4. - S. 152-157. Kursk.
 19. Abdullaev A., Rakhimov A. The use of fibrous silk waste in spinning .//Monograph. 2009. Ed.
 20. Islambekova N.M., Bobokhonov F.O., Yunusov L.Yu. Study of factors influencing the change in the state of the sericin molecule in dry cocoons .//J. Textile problems. 2004. №1. -C. 15 17.