Analysis Of The Quality Indicators And Economic Efficiency Of Raw Silk Produced From Local Cocoons

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Abstract
This article presents the results of research work on the development of a method for assessing the quality indicators of raw silk from cocoons of local varieties of silkworms on modern cocoon reeling machines. As part of the study, the linear density of cocoon threads, live and dry technological indicators of laboratory cocoons of the UzNIISHP LC system were studied. According to the results of the study of cocoons, the number of cocoons, i.e., the linear density of 1.89 tex, was determined under the holder of the rewinding machine when unwinding silk raw material. The economic efficiency of the quality indicators of raw silk produced from local cocoons was also studied.
Keywords: Cocoon, cocoon shell, cocoon thread, linear density, cocoon unwinding, silk raw material, raw silk productivity, assortment, continuous unwinding length of cocoon thread, total length of cocoon thread, cocoon reeling machine.

The samples of raw silk with a linear density of 1.89 tex produced were tested in the institute's testing laboratory in accordance with the requirements and methods of the current State Standard of the Republic of Uzbekistan Uz DSc 3313:2018. Comprehensive laboratory tests were conducted on laboratory equipment available in the institute's testing laboratory. Laboratory tests were conducted without difficulties in the climatic conditions established based on the requirements of current standards.
Table 4.10 below presents the results of comprehensive laboratory tests of raw silk with a linear density of 1.89 tex produced on FEIYU 2000 NT cocoon spinning machines manufactured in the People's Republic of China.
Table Results of comprehensive laboratory tests of raw silk with a linear density of 1.89 tex produced on FEIYU 2000 NT cocoon spinning machines
Analysis of the results of laboratory tests shows that the produced raw silk assortments have very good quality indicators and are mainly rated with 3A class quality indicators. However, the produced raw silk meets the requirements of 4A class quality indicators in many indicators. However, both assortments of produced raw silk were rated with 3A class quality indicators according to the results of laboratory tests, since according to the requirements of the Uzbek State Standard DSt 3313:2018 in force in the republic, the quality of raw silk is rated with the worst indicator, therefore, both assortments of silk were rated with 3A quality indicator.
During the research process, the technology of cooking cocoons, obtaining raw silk, unwinding silk threads, and preparing raw materials was improved based on theoretical and experimental studies.
The economic efficiency of introducing improved technology for processing cocoons grown in the repeated season was calculated based on the current "Methodology for determining the

economic efficiency of introducing new techniques, innovations and rationalization proposals into the national economy" [1].

Annual economic efficiency was calculated by comparing the variable costs of the base and proposed technological options according to this methodology.

According to the current methodology, the economic efficiency of producing and using a new tool of labor (machine, equipment, etc.) is calculated using the following formula:

$$Э = \left[З_1 \cdot \frac{в_2}{в_1} \cdot \frac{P_1 + E_н}{P_2 + E_н} + \frac{\left(И_1^{'} - И_2^{'}\right) - E_н\left(K_2^{'} - K_1^{'}\right)}{P_2 + E_н} - З_2 \right] \quad (1.1)$$

where, 31, 32 – the amount of costs incurred per unit of output of old and new equipment, thousand soums; - the coefficient of comparison of the efficiency of new equipment with the old one; в1, в2 – the respective efficiency of the basic and new equipment; - the coefficient of taking into account the service life of equipment compared to the basic option; P1, P2 – the share of the deduction from the balance sheet value for the full restoration of the basic and new equipment, taking into account moral obsolescence; Ен – the standard efficiency coefficient, Ен=0.15; - the amount of capital investment directed by the consumer in the basic and new equipment; - the annual operating costs of the consumer when using the basic and new equipment in the implemented option.

The economic efficiency of this research is based on the fact that all costs associated with the purchase, transportation, installation and operation of equipment are covered by the cash flow and the quality of the product is improved. The data required for the calculation are presented in Table 1.

Table 1. Information required for calculating the economic efficiency of the implementation of improved technology for processing local hybrid cocoons in production

t/r	Indicators	O'lchov birligi	Variantlar	
			Bazis	Taklif etilayotgan
1.	Annual live cocoon production	tonna	1712	1832
2.	Number of installed equipment	dona	2	2
3.	Equipment operating speed	m/min.	150	150
4.	Electricity consumption	kVt.soat	5,5	5,5
5.	Depreciation allowances for equipment	%	15	15
6.	Daily maintenance allowance	%	5,0	5,0
7	Delivery and installation allowance	%	10,0	10,0
8	Price of 1 kWh of electricity consumed	so'm	325	325
9	Amount of payment for installed capacity	so'm	36800	36800
10	Amount of minimum wage established for settlements	so'm	920000	920000
11	Social insurance payment	%	23	23

1. Capital investment accounting

In the basic version:

The balance sheet value of installed equipment is equal to:

FY-2008 equipment (2 units) – 184250 thousand soums

Total: – 184250 thousand soums

In the proposed version:
The balance sheet value of equipment is equal to:
FY-2000 equipment (2 units) – 184250 thousand soums.
Scientific and technical development costs – 30400 thousand soums
Total: – 214650 thousand soums
2. Operating cost accounting
Accounting is carried out only for changed cost elements.
Depreciation allowances
In the basic option:
sum
In the proposed option:
sum
3. Daily maintenance costs
In the basic option:
sum
In the proposed option:
sum
4. Electricity consumption is calculated as follows:
(2)
where, - installed electric motor power; - demand coefficient; - annual useful operating time of equipment; - cost of electricity consumed per 1 kWh.
In the basic option:
sum
In the proposed option:
sum
5. Wages:
In the basic option:
sum
Total: – 14,352,000 soums.
In the proposed option:

Total: – 28,704,000 soums.
6. Social insurance contribution:
In the basic option:
сўм
In the proposed option:
сўм
The results obtained are presented in Table 4.5.
The amount of directed capital funds is taken as 10% of the balance sheet value of the basic and applied equipment:
сўм сўм
Putting the obtained data into formula (5.3), the annual economic efficiency obtained from the introduction of new equipment into production is calculated:

$$Э_{ü} = 206084 \cdot 1{,}0 \cdot 1 + \frac{(58945 - 87120) - 0{,}15 \cdot (21465 - 18425)}{0{,}164 + 0{,}15} - 210644 = -95741{,}5$$

sum
The total annual economic efficiency was as follows: sums. Thus, the economic efficiency is 125 sums for the production of 1 kg. of live cocoon for processing, and 100 kg. of raw silk for the production of 100632.43 thousand sums.

Table 2. Calculation of operating costs for the base and proposed options, in thousand sums

№	INDICATORS	Variantlar	
		Bazis	Янги
1	Cost of equipment before improvement	167500	167500
2	Costs of transportation and installation of equipment	16750	16750
3	Correct capital costs	145558	145558
4	Costs of R&D	-	30400
5	Capital investments of production funds for the creation of equipment	145558	175958
6	Costs incurred for the preparation of equipment	206084	210644
7	Operating costs, total	58946	87121
	- depreciation deductions	27638	32198
	- daily maintenance	9213	10733
	- cost of consumed	4442	8884
	electricity	14352	28704
	- wages	3301	6602

[8].

Conclusions

Currently, the demand for thin silk fabrics with high surface density is very high in the world market, especially in African and Middle Eastern countries. Thin, elegant silk fabrics with high surface density are produced from raw silk with a linear density of 1.89 and 1.56 tex. However, raw silk with a linear density of 1.89 tex is not produced in silk spinning enterprises, therefore, the development of a technology for producing raw silk with this linear density is one of the most urgent problems.

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