ELIMINATING FACTORS THAT CAUSE DEFECTS IN THE STORAGE OF RAW SILK

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Abstract: The research conducted shows that in recent years, the sericulture industry, including the processes from silkworm farming to the production of silk products, and the equipment used in these processes, have been improving. Currently, to ensure the continuous operation of sericulture enterprises, silkworms are stored in the warehouses of silkworm breeding enterprises. Although this may seem like a simple situation, it is of great technological significance. This is because during storage, the silkworms are exposed to environmental factors, metrological conditions, various pests, and other factors, leading to the disruption of the structure of the silkworm layers, damage to the silk layers, and the aging of sericin. Experiments have shown that when the storage period exceeds 11-12 months, raw silk yield decreases by 6.5%, the silk's flexibility decreases by 7.1%, and as a result, during the spinning process, the loss in output increases by 1.6%, while the recovery rate increases by 1.3%.

Keywords: Cocoon, defective cocoon, cocoon lotion, Bardo and Sivuš oils, silk rings, chemical and biological mixtures, raw silk.

Annotatsiya. Olib borilgan tadqiqotlar shuni ko'rsatadiki, so'nggi yillarda pillachilik sanoati, shu jumladan ipak qurti etishtirishdan ipak mahsulotlari ishlab chiqarishgacha bo'lgan jarayonlar va ushbu jarayonlarda ishlatiladigan uskunalar takomillashmoqda. Hozirgi vaqtda pillachilik korxonalarining uzluksiz ishlashini ta'minlash uchun ipak qurti naslchilik korxonalari omborlarida saqlanmoqda. Garchi bu oddiy holatdek tuyulsa-da, bu katta texnologik ahamiyatga ega. Buning sababi shundaki, saqlash vaqtida ipak qurtlari atrof-muhit omillari, metrologik sharoitlar, turli zararkunandalar va boshqa omillarga duchor bo'lib, ipak qurti qatlamlari tuzilishining buzilishiga, ipak qatlamlarining shikastlanishiga va

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seritsinning qarishiga olib keladi. Tajribalar shuni ko'rsatdiki, saqlash muddati 11-12 oydan oshganda, xom ipak hosildorligi 6,5% ga kamayadi, ipakning egiluvchanligi 7,1% ga kamayadi va natijada yigiruv jarayonida mahsulot yo'qotilishi 1,6% ga oshadi, tiklanish darajasi esa 1,3% ga oshadi.

Kalit so'zlar: pilla, nuqsonli pilla, pilla losoni, Bardo va Sivu va Sivu va biologik aralashmalar, kimyoviy va biologik aralashmalar, xom ipak.

Аннотация: Проведенные исследования показывают, что в последние годы индустрия шелководства, включая процессы от разведения шелкопряда до производства изделий из шелка, а также оборудование, используемое в этих процессах, совершенствуются. В настоящее время для обеспечения бесперебойной работы предприятий шелководства шелкопряды хранятся на складах предприятий по разведению шелкопряда. Хотя это может показаться простой ситуацией, она имеет большое технологическое значение. Это связано с тем, что во время хранения шелкопряды подвергаются воздействию факторов окружающей среды, метрологических условий, различных вредителей и других факторов, приводящих к нарушению структуры слоев шелкопряда, повреждению слоев шелка и старению серицина. Эксперименты показали, что когда срок хранения превышает 11-12 месяцев, выход шелка-сырца снижается на 6,5%, эластичность шелка снижается на 7,1%, и, как следствие, в процессе прядения потери продукции увеличиваются на 1,6%, а скорость извлечения увеличивается на 1,3%.

Ключевые слова: Кокон, дефектный кокон, лосьон "кокон", масла Бардо и Сивуш, шелковые кольца, химические и биологические смеси, шелк-сырец.

Introduction

Our republic occupies a leading position in the cultivation of raw materials essential for the textile industry, such as cotton, natural silk, hemp, and wool, and plays an important role in the economy while fulfilling the population's needs[1]. Additionally, the products produced are used in other industrial sectors for technical purposes. In the context of the development of the market economy, especially during a period of global financial crisis, it becomes critically important to effectively utilize local raw materials, expand the range of consumer goods, improve their quality, increase the export potential of textile enterprises, and produce import-substituting products[2].

As emphasized by our President, it is necessary to export not cheap raw materials but high-quality finished products. To expand export opportunities and enter global markets, it is essential to develop joint ventures that produce finished goods based on the processing of valuable raw materials. Modern compact

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enterprises should be built in cooperation with foreign partners and located near rural areas, which are sources of labor[3].

Moreover, the silk industry is one of the major production sectors in the Republic of Uzbekistan, and it holds a leading position in the world in terms of cocoon production and processing [4]. Therefore, this sector becomes a significant export source for independent Uzbekistan [5].

The government has set a goal in its targeted program to establish silk enterprises based on modern technologies and advanced techniques in our regions and to ensure that at least 70% of the produced products are exported [6].

Currently, cocoons are stored in silkworm storage warehouses to ensure the continuous operation of sericulture enterprises[7]. While this may seem like a simple matter, it holds significant importance for technological processes. The preservation of cocoons leads to structural damage to the cocoon layers, the deterioration of the silk layer, and the aging of sericin due to environmental conditions, meteorological factors, pests, and other influences[8]. Experimental data shows that if the storage period exceeds 11-12 months [9], the yield of raw silk decreases by 6.5%, and the tenderness decreases by 7.1%, while the cocoon's weight increases by 1.6%, and the yield from the boiling process increases by 1.3% [10]. Long-term storage of the cocoons results in damage caused by various pests and rodents [11]. The appearance of termites is due to environmental pollution. Currently, one of the pests found in silkworm warehouses is *An Aremus Slavipes*. When studied, it was found that this pest, with an oval shape and white, yellow, and black spots on its body, damages the cocoon and its contents, and over time, damages the cocoon shell [12].

The appearance and multiplication of termites significantly damage the silkworm industry. They are found mainly in the initial processing bases and storage warehouses [13]. Termites thrive in decayed cocoon shells or defective cocoons, bird nests, and their larvae [14]. The study revealed that certain types of termites, such as *Dermester Yandarius*, *O. masulatus*, and *Srischie*, are particularly dangerous for sericulture [14]. The larvae of the *Dermester* species destroy the wooden parts of buildings and create nests, later becoming beetles that fly away[15].

To protect the cocoons in sericulture and cocoon processing, it is essential to carry out repairs in storage facilities and closed rooms before accepting new crops and to close any holes and cracks. All areas where the cocoon is stored and the surrounding environment should be disinfected using a 80% technical chlorophos solution (1.9-2.3 g/m²), 50% carboxyl solution (1.5-2 g/m²), or 50% chemical

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solutions[16]. However, due to the shortage of these chemical solutions, especially those imported, the necessary actions are often not carried out.

Scientific research indicates that if the substance contains amino groups, the *Cocoon* beetle will not consume these substances. In our study, we used the waste products of the "Biokimyo" factory (Bardo and Sivuš oils) and synthesized a surface-active substance (SFM) under laboratory conditions. The prepared SFM contains hydroxyl and carboxyl groups similar to those in the cocoon's composition. The substance is neutral and non-toxic, and it contains amino groups that are not consumed by the *Cocoon* beetles and other pests. It does not negatively affect the health of workers in the cocoon processing plants.

The experiments were conducted in the main cocoon workshop of the Altinkul district of Andijan region. Before initial processing, the cocoon was treated with new chemical preparations (SFM) and then underwent technological processing. The dried cocoons, 30 kg each, were packed in hemp (rovendukh) bags and sent to the storage warehouses of the cocoon processing plant.

The cocoons sent for the experiment were stored in the warehouses of the "Ipakchi" limited liability company in Andijan city for 11-12 months. The results of the experiment showed that in comparison with the control group, the cocoons treated with chemical preparations had 60-67% less damage from *Cocoon* beetles.

When the cocoons treated with chemical preparations (SFM) were stored in batches of 5 kg and tested quarterly, it was found that the modification process increased the yield of cocoon spinning by 1.2 - 1.9% compared to the control group.

In conclusion, modifying the cocoons before the initial processing with new SFM based on Bardo oil residue and Sivuš oil significantly reduces the factors causing defects during storage.

1. A method for determining the amount of weight force affecting the cocoons and shell in the technological processes of preparation, storage and DIB of wet and dry cocoons, external mechanical forces, and the amount of weight exerted by 30 kg of cocoons in the warehouses of the cocooning enterprise.

2. Factors causing pollution, damage of cocoons and husks, changes in physical chemical and physical mechanical properties -of silk fibers in cocoons husks were analyzed and determined in technological processes of PDIB and dry cocoons storage .-

3. The causes of wear and deformation of cocoons and shells during storage of dry cocoons were studied and the negative effects of these factors were theoretically justified.

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