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Using the Ultrahigh Frequency Effect (UFEF) Electromagnetic Field During Dehydration of Silkworm

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ABSTRACT: The article presents one of the most urgent and pending problems of sericulture today-the question of animating the silkworm during the primary processing of live silk. The advantages and disadvantages of the results of research on the animation of the mulberry silkworm to date, as well as information about the technology and technical devices used in the primary processing of silk are presented. A proposal is put forward to use the effect of an ultrahigh-frequency (UFEF) electromagnetic field when animating the dome of a silkworm, experimental results of processing a living cocoon with an ultrahigh-frequency electromagnetic field (UFEF) are presented.

KEY WORDS: Silkworm, cocoon, primary processing, animation, SC-150C, CSC-4,5, Yamato-Sanco, steam dryer and simplex dryer, dry cocoon, cocoon humidity ultra-high frequency electromagnetic field (UFEF).

I.INTRODUCTION

Currently, more than 60 countries of the world are engaged in the preparation of cocoons, the production and processing of natural silk. If we turn to foreign experience, after the Second World War, Japan began to sell foreign currency earnings to its country, in addition to silk and silk fabrics. In particular, countries such as China, India, Uzbekistan, South Korea, Brazil, Thailand, North Korea and Vietnam, which are developing rapidly today, are strengthening their economies by increasing the production of raw silk from it, as well as the sale of cotton. According to the statistics of the International Committee on Forests [1], by the end of 2020, Uzbekistan had grown 19.5 thousand tons of live cocoons and, accordingly, the volume of raw silk production by the Republic amounted to 770.5 tons, while China ranked third after 104 thousand tons and India 29.6 thousand tons. Of course, there are still tasks that need to be solved, although the results achieved today in the pilot network are positively noticeable in numbers.[1-4, 15, 16].

Currently, there are such units as SK-150K, KSK-4,5, Yamato-Sanko, steamship and simplex, which are designed for drying sawtooth raw materials at first processing enterprises (PDIK).

The high temperature of the hot air, which affects it for a long time during the process of reviving and drying a living cocoon, negatively affects the technological nature of the cocoon shell, reducing the volume of raw silk production, most of the aggregates used in it are partially outdated and obsolete, which makes it necessary to reduce the quality of raw material processing.

II. ANALYTICAL INDICATORS

Currently, there are several methods of pretreatment of lattices, which can be divided into two groups, depending on the technology of reviving and drying processes of live porridge individually or in multiples.

In the first group, the living cocoon of the cocoon is only being destroyed, so the destroyed cocoons of the cocoon are dried in a shaded stellac. This includes methods of processing with steam, chemicals, germination, gamma rays and storage in a cold environment.



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In the second group, the above processes are dried in layers, that is, together with the inanimate formation of a living cocoon. The methods of processing using sunlight, in a vacuum environment, in extreme heat (convective) and under the influence of infrared light are taken from the shular proposal.

A number of research works have been carried out to create a new method and device for the initial operation of pillars, their optimal modes.

Processing of live steamers for the steam-this method is carried out in special steam chambers. Live batteries are placed in a 5-7 cm thick steam chamber in gauze jars and heated for 92 minutes at a saturated steam temperature above 960-60 C. In the steamer, about 30 people a day will work on reviving 1 ton of live cocoons and drying them in a shaded stellac. Due to the fact that during the subsequent drying, the molts remain for a long time without mixing in the racks, this causes an increase in the number of internal pads for coloring.

The chemical treatment-this method stops vital activity by poisoning the respiratory tract under the influence of chemical vapors of a living cocoon in special chambers. When studying the influence of inactivated shadow drying methods on the technological, physical and mechanical properties, quantity and quality of the cocoon shell under the influence of toxic chemicals, an increase in the number of cocoons and spotted cocoons, an increase of moldy cocoons up to 4% was noted. As a result, the plumage disappeared pure white and shiny, and the buds turned orange.

Under the influence of gamma radiation, the revival and drying of a living cocoon in the shade-a violation of biological processes in the cocoon tissues as a result of exposure to gamma radiation on living cocoons, for example, radioactive substances Co60-cobalt, leads to its weakening. The research results show that when irradiating batteries with gamma rays at a dose of 2×10^5 - 5×10^5 X-rays, raw silk does not have a negative effect on the physical and mechanical properties. In large doses and with a long duration of irradiation, the destruction of silk occurs. As a result, the strength of the yarn decreases and the color of the resulting raw silk turns yellow.

The method of processing under the influence of sunlight is one of the ancient methods that was originally used by Chinese stairs. The performance of such a dryer is 1 kg/hour with a drying area of 2.1 M2, the coefficient of use of concentrated heat is 50%. The disadvantage of the heliocuritor is that it can be applied only in the daytime, on cloudless days in the open air, and the treated steps can be in one thin layer, which reduces the productivity of its work.

Treatment under the influence of infrared light-the essence of this method is that the optimal wavelength of infrared radiation penetrates through the shell of the cocoon and, as a result of its strong heating, it dries lifelessly. The disadvantage of this method is that the use of the full drying mode when processing live batteries leads to a time overload and an increase in electricity costs. At the same time, it was not introduced into production due to the complexity of installing infrared lamps in KSK-4,5 dryers, as well as high costs.

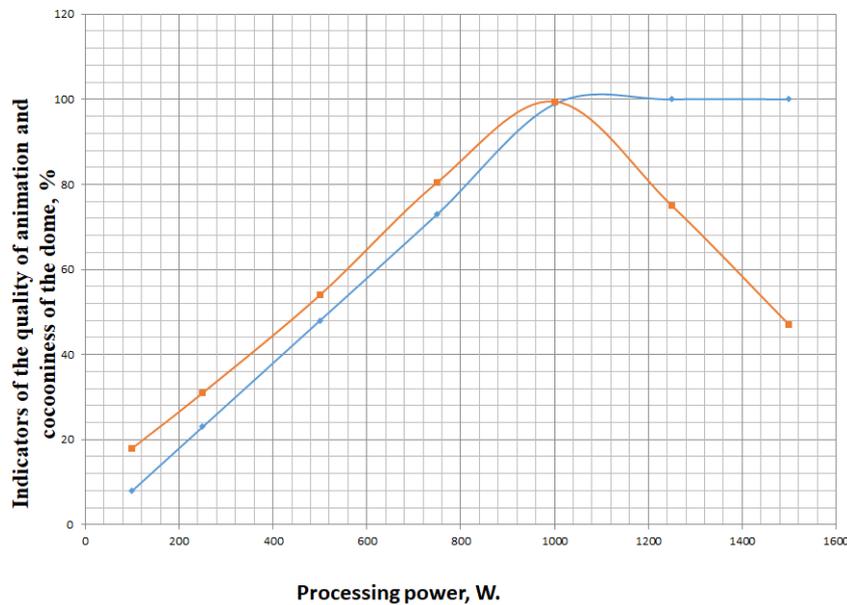
Although high results have been achieved in some scientific studies conducted on the primary processing of the pill, today almost all pill processing enterprises dehydrate the piece by treating it with hot air (carried out). Heat exchange between the shell and the construction aggregate is carried out by convection during drying. When drying by this method, an increase in excessive energy consumption and a decrease in efficiency lead to the fact that it takes 2-3 hours to dry. And the quality indicators of dried tablets are low.

During the initial processing of the stage, we offer processing of the stage shell with an extremely high-frequency electromagnetic field (engraving), taking into account the properties of air and water transport, technological properties, as well as the physical, mechanical and chemical properties of silk.[5-7, 17, 18, 19, 20]

III. RESULTS AND ANALYSIS

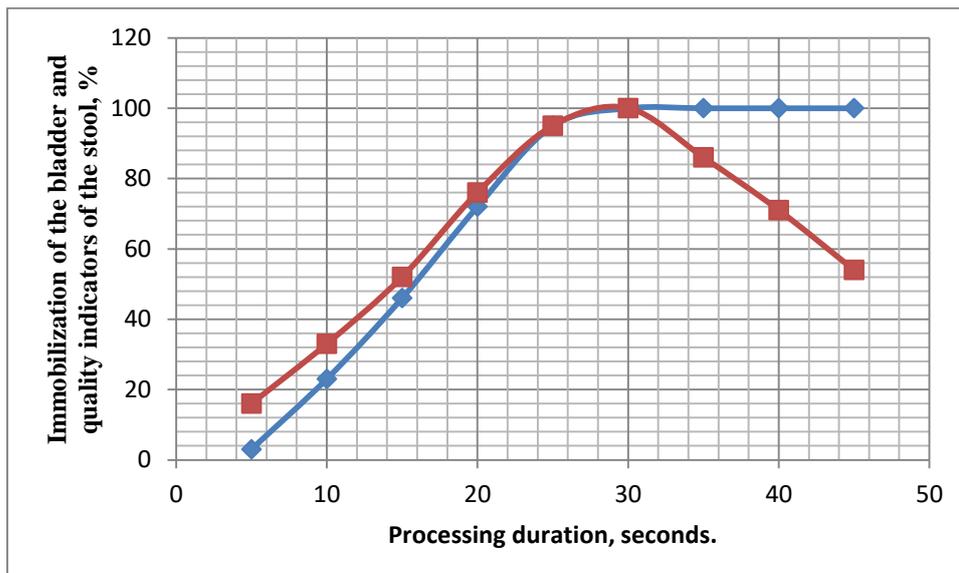
The proposed extremely high-frequency (crushed stone) electric-magnetic field is the immobilization of a living pill petal using electrical technology, in this method, the immobilization of the petal occurs as a result of internal heat exchange, which occurs in an extremely high-frequency electric magnetic field. The process of internal heat exchange in the winding of the tail coil itself in the coil shell, and does not adversely affect the properties of the shell, depends on the choice of frequency parameters of the processed coil, the voltage of the electric field and the duration of processing. In order to increase the temperature inside the cocoon and remove it by convection, it must be treated for 2450 seconds with an alternating current with a frequency of 30 MGs. This is achieved due to the fact that the cocoon shell does not overheat. The bund cocoon loses 13-15 % in weight, and the drying period in the shade is reduced to 15-20 days. For experiments, varieties of silkworm-1 and silkworm-2 duragai were obtained[8, 9, 21, 22, 23, 24].

The results of the experiment showed that the bud of the silkworm Tuta is processed by an extremely high-frequency (engraving) electromagnetic field.



1-picture. The revival of the mulberry worm bud and the dependence of the cocoon quality on the processing power.

From the results of the experiment, it turned out that when processing the life cycle at 2450 MGs and for 30 seconds, 100% immobilization of the lump in the cocoon and quality indicators depend on the power of the device being processed. When the processing power is less than 1000 Watts, the level of kidney inactivity in the cocoon decreases, and the cocoon is punctured. This makes the cocoon unusable. If the processing power is increased to 1000 Watts, the bump in the notch will break and worsen the quality of the notch.



2-picture. The revival of the mulberry worm bud and the dependence of the cocoon quality on the processing time.

Based on the results of the experiment, the obtained curve lines mean that when processing a living cell at 1000 W, 2450 MGs for 30 seconds, 100% inactivation of the lump in the cell is achieved. When it is processed for less



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than 30 seconds, the rate of inactivity of the kidneys in the cocoon decreases, and the cocoon penetrates into the cocoon. And an increase in the processing time by 30 seconds leads to a deterioration in the quality of the porous cracked cocoon in the cocoon [7, 14, 25, 26].

IV. CONCLUSION

From the results of the conducted research and experiment, it turned out that when using electrophysical influences during the dehydration of a living cocoon, it is certainly necessary to take into account its mechanical, physico-chemical and other properties.

In order to revive a living cocoon, it is necessary to take the processing parameters during the initial processing so that they do not affect the quality indicators of the processed cocoon.

The processing power should be 1000 W when the mulberry worm bud with an extremely high-frequency (crushed stone) electric magnetic field is inactivated, and the processing duration should be 30 seconds.

The obtained processing parameters must be tested in production conditions

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