

INFLUENCE OF CULTIVATION OF TUT SILK GURT RACES IN VARIOUS CLIMATIC CONDITIONS ON REPRODUCTIVE AND VITABILITY INDICATORS

(in the conditions of Karakalpakstan)

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Abstract

The article scientifically substantiates the revival and care of marked hybrid seeds of the mulberry silkworm at various temperatures and humidities, provides theoretical data, and conducts an in-depth analytical study. The goal is to improve the productivity and technological properties of cocoons based on the adaptation of targeted silkworm hybrids to the sharply changing natural and climatic conditions of the Republic of Karakalpakstan.

Keywords: silkworm eggs, incubation, temperature, humidity, light, mulberry leaf, marked silkworm, hybrid, silkworm colony, bunch, pupa, butterfly, varietal cocoon, silk fiber.

Introduction The demand for silk fibers and goods made of natural silk in our country and in the world markets is growing every year. Based on this requirement, the government has adopted several decisions in recent years to develop sericulture and produce high-quality raw silk.

In particular, Resolutions of the President of the Republic of Uzbekistan No. PP-73 dated February 24, 2023, "On measures for the further development of the silk industry," and The Decree of the President of the Republic of Uzbekistan No. UP-85 dated June 1 "On additional measures to support home-based work in the field of sericulture and further expand the feed base for cocoon production" defines urgent tasks for the expansion of the export potential of the sericulture industry by widely testing the achievements of silkworm breeding, developing primary seed production of silkworm breeds and hybrids, creating breeds and hybrids that meet international standards by developing advanced scientific developments and intensive agrotechnologies, taking into account the natural and climatic conditions of the regions, increasing the production of local silkworms and cocoons, and improving their quality. [1,2].

The extent to which the problem has been studied. In Uzbekistan, extensive research has been conducted by E. Mikhailov, N. Bakhovuddinov, B. Parpiev, N.A. Akhmedov, and Sh.R. Umarov on the assessment of environmental factors in silkworm rearing, feeding technology, feed quality, and the influence of the silkworm rearing area on its growth and development.

It should be noted that scientists from countries with developed silk industries, such as M.E. Braslavsky, G. Bekirov, Yu. Shukurlyu, N. Bulatze, S. Salimdjanov, and Bharat B., V. Satish, F. Pescio, P. Marino, and H. Yenciso, have conducted research on silkworm rearing methods in tropical, subtropical, and extremely humid regions, as well as in unfavorable conditions, ensuring the adaptation of silkworms to unfavorable conditions using monovoltin breeds, and the rational use of biologically active substances, achieving certain positive results [3,4].

N.V. Shurshikova, M.E. Braslavsky, V.A. Strunnikov, U.N. Nasirillaev, A.B. Yakubov, B.U. Nasirillaev, E.A. Larkina, N.K. Abdikayumova, Hemmatatadi N., Keshan B., Sabhat A. conducted scientific research on artificial sex regulation or the gradual change of animal sexes [5, 6, 7, 8].

Research methods and materials. Experiments on the creation and implementation of mulberry silkworm hybrids for changing environmental conditions were conducted in 2023-2024 in the laboratory of the Department of Sericulture of the Institute of Agriculture and Agrotechnologies of the Republic of Karakalpakstan and the Takhiatash district on marked mulberry silkworm hybrids imported from the "Silkworm Breeding" laboratory of the Uzbek Research Institute of Sericulture.

In all research, observations, and experiments conducted to create and introduce mulberry silkworm hybrids adapted to changing environmental conditions, the geographical location of the Republic of Karakalpakstan was studied, including natural ecology, salinity, and the natural soil and climatic conditions of desert zones (in cooperation with the Republican Agrometeorological Station, research institutes of the Academy of Sciences, and organizations for ecology and environmental protection).

The selection of regions of the Republic of Karakalpakstan with different climatic conditions ensured more effective and reliable scientific research.

In the course of the research, morphological, biological, technological, production, and statistical analysis methods were used, as well as the methodologies "Basic Methodological Rules of Silkworm Breeding" and "Agrotechnics for Cultivating White Silkworm Breeds."

From the traditional method of selection at all stages of silkworm development, the method of selection based on the motor activity of the silkworm moth, the method of differentiation by breed indicators, and the study of the variability of breeding families and individuals.

The research work is devoted to the selection of sex-marked silkworms, the improvement of their productivity indicators, and the preparation of 100% pure hybrids for the full manifestation of heterosis properties.

Research results and their discussion

If strict selection is carried out at all stages of silkworm development (egg, larva, pupa, butterfly), the indicators may change for the better. For example, during the egg esthetification period, work was carried out to select the best cuttings based on the following indicators: the number of normal eggs in the cuttings, the mass of

the cuttings, the mass of one egg, and the ratio of the sexes to 1:1. The reproductive indicators of the studied breeds are presented in Table 1.

Table 1.

Reproductive indicators of the eggs of the breeds under study (2025).

No p/p	Breeds	Number of normal eggs, units		Normal egg weight, mg		Weight of one egg, mg	
		$\bar{x} \pm S_{\bar{x}}$	S_v	$\bar{x} \pm S_{\bar{x}}$	S_v	$\bar{x} \pm S_{\bar{x}}$	S_v
1	S-10	492±6,7	18,3	246±4,0	21,7	0,501±0,60 3	4,6
		447±9,7	18,2	206±5,8	23,2	0,464±0,00 7	12,6
2	S-12	624±15,0	13,2	324±7,9	13,3	0,520±0,06 5	5,4
		459±15,9	19,0	202±7,8	21,2	0,437±0,00 5	6,6
3	Silkwor m Breeder 1 (Control)	654±6,6	10,7	354±7,9	15,2	0,542±0,00 3	4,1
		690±7,0	11,2	320±8,0	16,1	0,542±0,10 3	6,2

According to the data in Table 1, among the sex-specific breeds, the highest number of eggs in the clutch was in the C-12 (624 eggs), the lowest in the C-10 (492 eggs), and the highest in the C-12 (324 mg) and lowest in the C-10 (246 mg) breeds, which is slightly lower than the control Ipakchi 1 breed (624 eggs, 354 mg). However, since these differences are insignificant, it can be assumed that the reproductive indicators of the sex-determined breeds are at the same level as those of the control variant.

For example, we can see that the coefficients of variation for the number of normal eggs varied from 13.2 to 18.3%, for the mass of normal eggs from 13.3 to 21.7%, and for the reanimation of eggs from 1.0 to 6.7%. In subsequent research, we can use it as a component breed when creating other hybrids.

Conclusions, scientific research conducted in the climatic conditions of the Republic of Karakalpakstan, and observations were conducted based on the characteristics of the hybrids in each variant; an in-depth analysis of temperature, humidity, nutrients, and other natural factors was conducted, and their influence was studied.

The soil and climatic conditions of the regions where experiments are conducted serve as the basis for developing recommendations based on the high or low productivity of foreign mulberry silkworm hybrids in these regions.

Based on sex-marked silkworm breeds, work was conducted to create lines with high reproductive and biological indicators; currently, it has been studied that

the viability of marked silkworms is 94.6–96.0%, cocoon mass is 1.46–1.55 g, and silkiness is 21.0–22.6%.

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