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The Impact of Extremely Changing Temperature and Humidity to the Breeding of Foreign Mulberry Silkworm Butterflies

Oripov Otabek Oripovich
doctor of philosophy (PhD) degree on agricultural sciences, Tashkent State Agrarian University, Tashkent, Uzbekistan
o.o.oripov@mail.ru +998998860585
Umarov Shavkat Ramazonovich
Doctor of Agricultural Sciences, Professor of the Department Sericulture and Mulberry Growing, Tashkent State Agrarian University, Tashkent, Uzbekistan
ushavkat@mail.ru +998935630383
Karimov Sherali Allaberdievich
Termiz branch of Tashkent State Agrarian University, Head of the Department of Zooengineering, Veterinary Medicine and Silk, Associate Professor
sheralikarimov607@gmail.com +998915750125
Bobomurodov Murod Khojimurotovich
Termez branch of Tashkent State Agrarian University, Senior Lecturer at the Department of Zooengineering, Veterinary Medicine and Silk
murodjonbobomurodov1987@bk.ru +998975522287
Normatov Ruzibek Jorakul ugli
Termez branch of Tashkent State Agrarian University, Assistant of the Department of Zooengineering, Veterinary Medicine and Silk

ABSTRACT

In the article scientific evidence of the emergence, mating and laying of eggs of butterflies at different temperatures and humidity of mulberry silkworm breeds from abroad has been theoretically obtained and studied in-depth analysis.

It is aimed to prepare silk worm eggs on the basis of adaptation of the silk worm to the sharply changing natural climate-conditions of Uzbekistan of mulberry silk worms from abroad, improve the productivity and technological characteristics of the plank. The impact of different temperatures and humidity on the fertility of mulberry silkworm breeds imported from abroad and adapted to the conditions of Uzbekistan, as well as effective scientific solutions of seed care from abroad, based on the effective agrotechnology of worm breeding, have been identified.

Keywords: silkworm seed, cast, number of eggs, temperature, humidity, light, silk worm, sort, veil, butterfly, sort of cocoon.

INTRODUCTION

Despite the fact that our republic occupies one of the leading places in the world in the preparation of cocoons and natural silk, the pace of production of silk products in the following years is not at the required level. Some mistakes and shortcomings in the processes of preparing silk worm seeds, maintaining the productivity indicators of breeds and hybrids in production conditions, strengthening the nutrient base, increasing the salinity of growing cocoons and improving its quality are the cause of this.Such cases in production lead to the emergence of the opinion that the biological indicators of the silkworm breeds created by scientists of our country are not at the required level, as a result of which they import seeds of silkworms from abroad. Therefore, every year there is an increase in the import and revitalization of silkworm seeds from abroad, mainly from the people's Republic of China. The amount of seeds of silkworms imported from abroad is 70-80 percent of the amount of silkworms being fed in our republic.

The analysis shows that the imported mulberry silk worm hybrids are not able to demonstrate their domestic capabilities in the agroclimate conditions of Uzbekistan. In

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particular, we can see the effect of the mulberry leaf, which is given as a feed to feed the silk worm in small and large ages agrotechnics, high temperature and humidity, the conduct of the cocoon wrapping agrotechnics under completely different conditions. As a result, the average number of crops of cocoon taken from each box is 55-57 kg, the amount of the brewed mixture of the prepared cocoon is about 70-80%, the amount of silk output from the dry step is 32-33%, and the length of the woven silk is 750-1200 meters.

These figures are one and a half to two times higher than in developed countries of the piloting, such as China, Japan, Korea, Thailand, Brazil, India developed piloting. Of course, such a low figure can not ensure the competitiveness of our silk products in the domestic and foreign markets. [2,3] In the positive solution of the above-mentioned problems, great attention is paid to adaptation of mulberry silk worms brought from abroad to the conditions of Uzbekistan, increasing the productivity, quality and technological features of the cocoon, searching for optimal conditions, full study of these processes, their improvement and creation of acceptable technologies, proof on the basis of ongoing research.

The development of the silk worm passes by closely intertwining with the external environment. The silk worm receives energy from the external environment, through leaves, oxygen and sunlight. At this time, the worm releases its products of life: garbage, water, uglekotaota and heat into the external environment. The physiological processes in the body of the worm and its condition depend on the state of the external environment. Without studying the influence of external environmental factors on silk worm breeds and hybrids, it is impossible to develop effective methods of reproduction and fertilization of butterflies with worms in the future, especially in breeds and hybrids brought from abroad.

This condition is noticeable when more living organisms fall from one environment to the second environment, at the same time this organism also changes its environment. Research in biological science has revealed ways to change the nature of organisms, as a result of a clear understanding of these interrelations, consciously and on a planned basis have shown ways of creating new breeds and hybrids. The better we understand the relationship between the organism and the conditions of the external environment, the more we can use the opportunity to regulate and create conditions of the external environment, the better we can handle the organism. Therefore, the relationship between the organism and the environment is of particular importance for agriculture, and the good breeds of animals are formed only as a result of the use of good agrotechnics and good zootechnics.

Decree of the president of the Republic of Uzbekistan on measures to ensure more effective organization of the process of acquisition of rights over land parcels and other immovable property as part of the South Caucasus pipeline expansion project more ... , carrying out prospective scientific research on the creation of high-quality industrial hybrids by bringing high-productivity breeds from abroad and chatting with high-breeds of valuable signs of local economy has been defined as an urgent task. Proceeding from the above, the first scientific-practical research work is being carried out on adaptation of silkworm breeds imported from abroad to the natural climatic conditions of our country [1,4].

Research methods and materials

Mulberry silk worm (Bombyx mori L.in 2013-2018, experiments on two fertile "Chinese" and "Japanese" mulberry silk worm breeds from China were carried out in the laboratory of the Department of "silk-growing and Mulberry" of Tashkent State Agrarian University, in the LLC "silk worm seeds" of Tashkent region Akkurgan district and in the LLC "silk worm seeds" of Navoi region.

In all the researches, observations and experiments conducted on the theme of the basis of

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optimal care technology of foreign breeds and hybrids of the mulberry silk worm, the geographical location of the district, including the natural soil-climatic conditions of the foothills and steppe zones, were also taken into account [5,8].

The choice of regions with different climatic conditions of the Republic made the dissertation research more effective and reliable.

The "Asaka" and "mercy" breeds of the local silk worm and the hybrids "Ipakchi-1 x Ipakchi-2", which are now widely Fed (60-70 %) in our Republic, have been used as comparators.

In the first part of our experiments, the female butterflies of the Chinese and Japanese breeds, brought from China, were put into the animation by taking 20 pieces from each of the egg moulds they threw. Depending on the revival of worms from eggs in the shed, 5 variants of each of the "Chinese" and "Japanese" breeds in the experiment were made.

The "Chinese" breed from China in the experiment was taken control, the "Asaka" breed, which was fogged up in our comparative Republic.

Control over the next "Japanese" breed in the experiment, the comparative one was used in our Republic from the "blessing" breed.

Variants are of three types of temperature and humidity:

- temperature 20-210S in the first experimental test, humidity 60-65 %;
- temperature 26-270S in the second experimental test, humidity 75-80 %;
- in the third experiment test, the temperature was 28-290S, humidity at 70-75%, eggs of mulberry silkworm breeds and hybrids from abroad were animated, qurtlari groomed, as well as butterflies from the cocoon were removed and paired.

Research results and their discussion

The development of a silk worm, the wrapping of a cocoon, and the procreation passes in connection with external environmental factors. In particular, the butterfly, which is considered an adult period of the silk worm, leaving its offspring is often closely related to the external environment [6,7].

In the process of working with these breeds, some problems occurred during the period of the outflow of butterflies from the cocoon, that is, the phenomenon of the outflow of butterflies from the cocoon. The fact that butterflies did not come out of the cocoon was 7-15% in the "Chinese" breed, 15-30% in the "Japanese" breed.

When the reasons for the complete withdrawal of butterflies from the cocoons were studied, it was found that the amount of "Sericinase" enzyme produced by the female butterflies to dissolve the cocoon shell was insufficient. As a result, the bark of some Paws is only hyacinth, but some are not even hyacinth. Therefore, the butterfly was forced to lay its eggs, which could not be pierced through the shell of the cocoon and were not thrown inside the cocoon [9,10].

Butterflies were all seen through a straight eye. No deficiencies were observed in the appearance of the observed butterflies, in order to determine their condition from the disease, preparations from the butterflies were prepared and microscopic analysis was carried out in the laboratory of the Department of silk and Mulberry as well as in the laboratories of Akkurgon "silk worm Seeds" LLC. Microscopic analysis as determined by the cellulosic method, each butterfly was crushed separately and checked for presence or absence of nuclear polyedrosis and nohematous pathogens in the case when the microscope MBI-6 magnified 600 times. As a result of these observations, no symptoms of the disease in the butterflies are pronounced. This in turn confirms the fact that it is correct to conclude that butterflies could not get out of the cocoon not as a result of the disease, but because of the thickness of the cocoon shell.

This result obtained gives an understanding of the reasons for the 100% cut-off use of the

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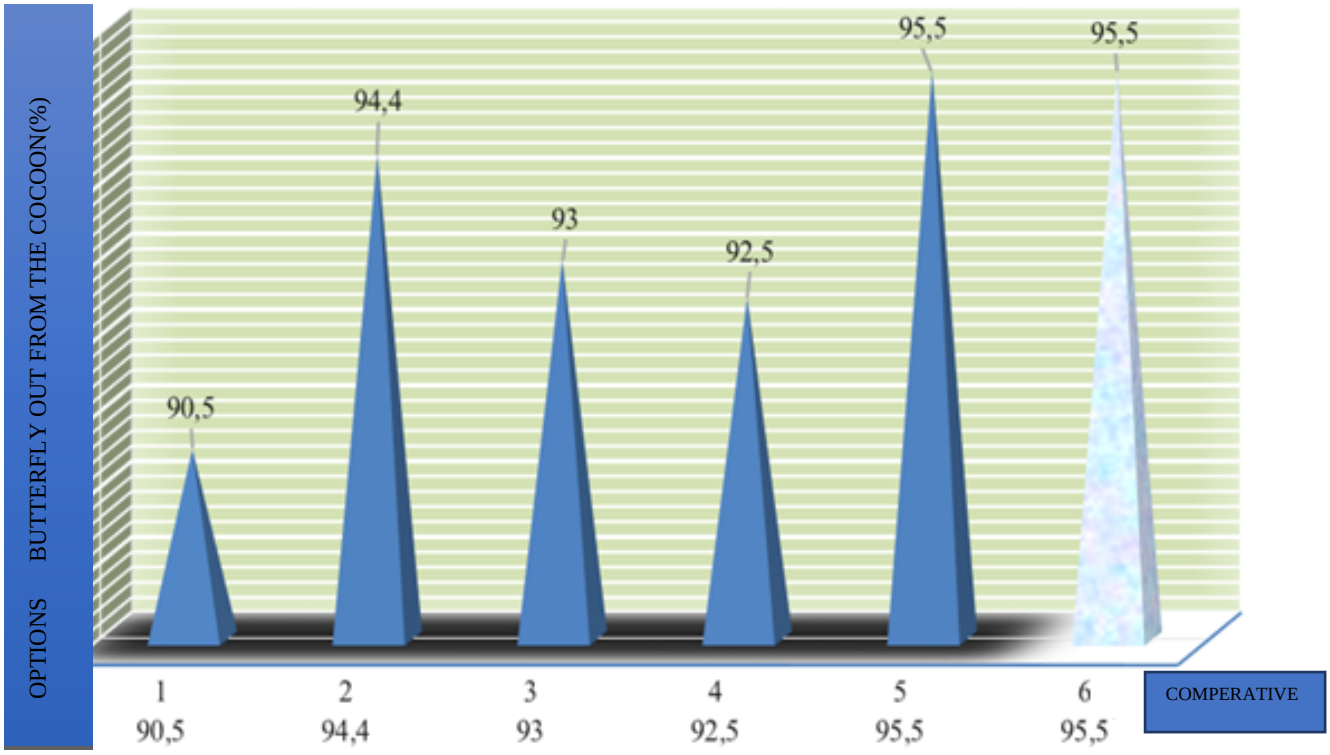
planks intended for fertilization at seed plants available in Japan and China.

Table 1

Origin and biological indicators of butterflies of the silk worm breed named "China" from China (2013-2015 yy.)

Options	Number of taken cocoons	The number cocoons used for biologic indication	The number of cocoons used for pavilioning	The number of cocoons left by the butterfly	The output of the butterfly%	Micro-analysis	
						polyhedrosis	pebrine
1-option	200	50	150	15,0	90,5±0,35 Pd=0,999	-	-
2- option	200	50	150	9,0	94,4±0,41 Pd=0,986	-	-
3- option	200	50	150	10,0	93,0±0,36 Pd=0,999	-	-
4- option	200	50	150	12,0	92,5±0,39 Pd=0,996	-	-
5- option	200	50	150	7,0	95,5±0,40 Pd=0,985	-	-
comparative kind of “Asaka”	200	50	150	7,0	95,5±0,32	5	-



1-figure. The exit of the butterflies of the" Chinese " breed from the cocoon (%)

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Therefore, if we use silk worm breeds that have a high degree of silkiness in our seed plants, we will have to use this technological method extensively.

Table 2

The output and biological indicators of the butterflies of the silk worm breed named "Japan" from China (2013-2015 y.y.)

Options	Number of taken cocoons	The number cocoons used for biologic indication	The number of cocoons used for papillioning	The number of cocoons left by the butterfly	The output of the butterfly%	Micro-analysis	
						polyhedrosis	pebrine
1- option	200	50	150	15,0	90,0±0,30 Pd=0,996	-	-
2- option	200	50	150	26,0	82,5±0,41 Pd=0,998	-	-
3- option	200	50	150	30,0	80,0±0,40 Pd=0,999	-	-
4- option	200	50	150	26,0	82,5±0,42 Pd=0,999	-	-
5- option	200	50	150	26,0	83,0±0,44 Pd=0,999	-	-
comparative kind of “Marhamat”	200	50	150	10,0	93,0±0,35	5	-

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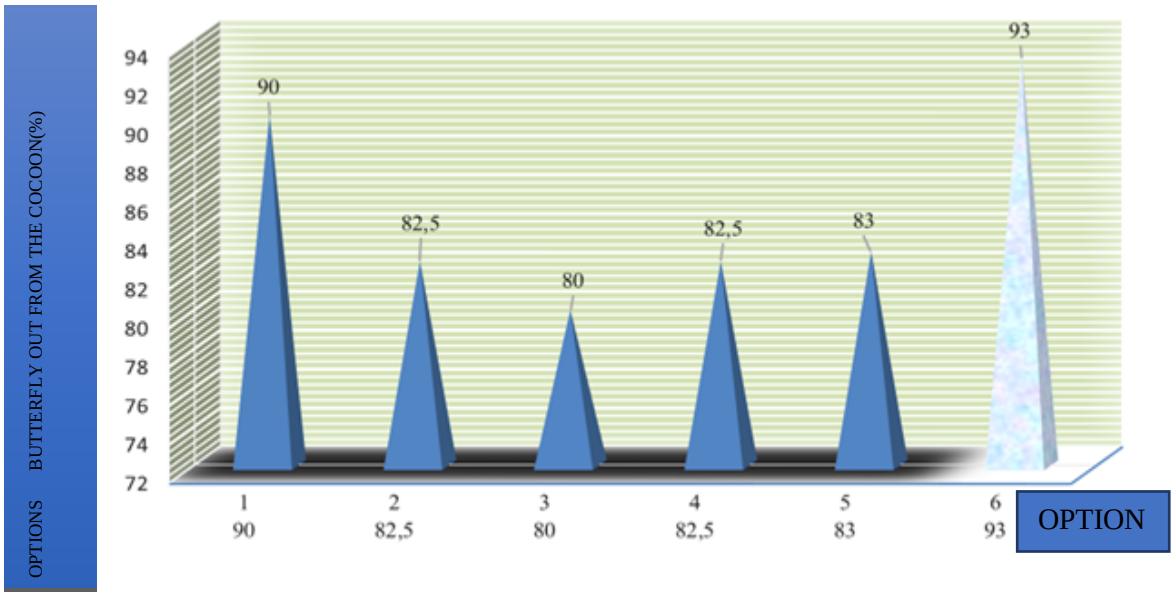

2-figure. The exit of the butterflies of the "Japanese" breed from China from the cocoon (%).

The main activity in the period of Butterflies is to breed, mate, fertilize eggs, lay eggs and leave offspring. At this time, the butterfly will need a moderate temperature and humidity, otherwise the butterfly will not be able to pair because it does not have its own body temperature. Therefore, at breeding and seed plants, when working with butterflies, it is required to keep the room temperature and humidity in moderation. In the process of working with butterflies, when the room temperature is lower than 150S, butterflies can not pair without stopping from moving. Butterflies can not pair well, even if the temperature is more than 300S. The most favorable temperature at which butterflies can pair well is 24-270S.

Along with room temperature, air humidity is also an important factor in the mating of the butterfly. If the room humidity is below 50 % and above 80%, the breathing of the butterflies becomes difficult, movement and mating slow down, and the separation of the seeds is slowed down. For the butterfly to breathe well, mating, it is required to be in the air humidity norm, at 65-75%.

Table 3

Indicators of the pinkness of the silk worm butterflies named "China" from China (2013-2015 yy.).

Options	Butterfly output from the cocoon, % m±m	Number of eggs in 1 PCs., m±m	Weight of 1 piece of cast, mg±m	Weight of 1 egg, mg±m	The amount of untreated eggs in the cast, % m±m	The amount of animated eggs in the period of storage (range), % M±m
1-option	96,5±0,4	960±0,1	630±0,2 Pd=0,999	0,656±0,42	0,3±0,01	0,7±0,001

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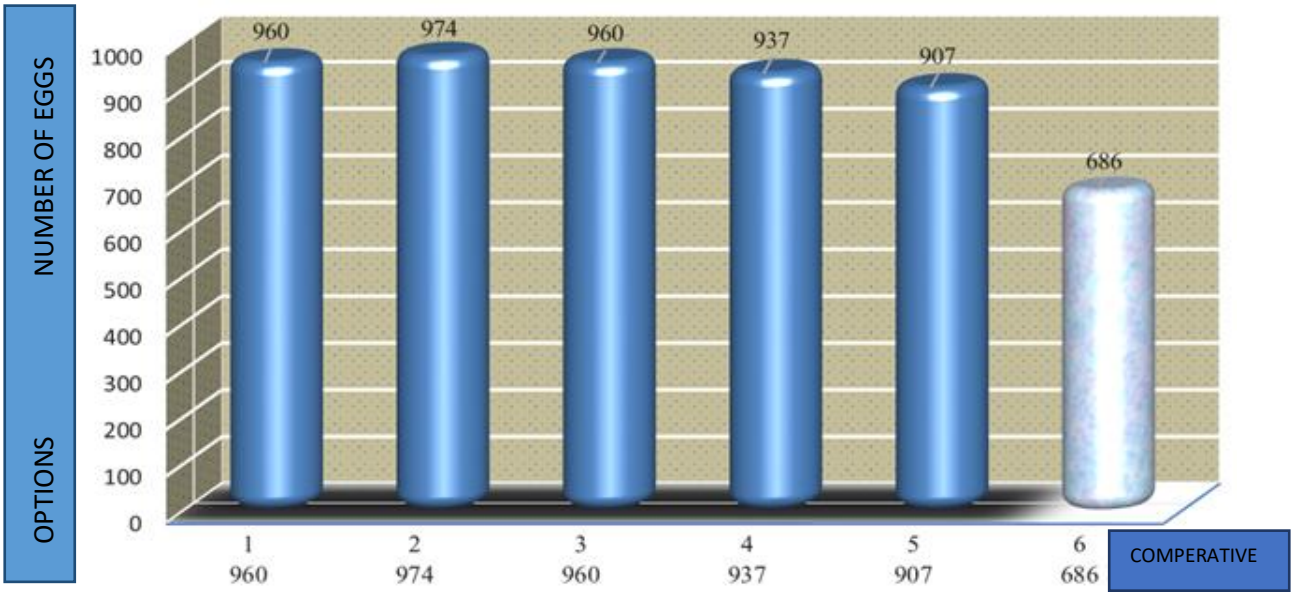
2-option	94,4±0,3	974±,0,3	630±0,1 Pd=0,999	0,646±0,35	0,4±0,02	0,4±0,004
3-option	93,0±0,4	960±0,1	610±0,3 Pd=0,996	0,635±0,42	0,6±0,04	0,4±0,001
4-option	92,5±0,4	937±0,2	650±0,5 Pd=0,999	0,693±0,45	0,2±0,01	0,5±0,001
5-option	95,5±0,3	907±0,3	610±0,2 Pd=0,998	0,672 ±0,40	0,2±0,04	0,4±0,005
comparative kind of "Asaka"	95,5±0,2	686±0,2	480±0,2	0,699±0,25	0,6±0,04	0,6±0,004



3-figure. Kind of "China" butterflies' pinkness

If there are missing butterflies during the dialing and pairing of butterflies, it must necessarily be determined. Such butterflies need to be picked up and thrown away, and butterflies with a dog, of course, must be examined in a microscope, and if it is determined that there is a pebrina, then such a party of paws will be released into the wound.

Table 4

Indicators of the pinkness of the silk worm butterflies named "Japan" from China (2013-2015).

Options	Butterfly output from the cocoon, % M±m	Number of eggs in 1 PCs., M±m	Weight of 1 piece of cast, мг M±m	The amount of untreated eggs in the cast, M±m	The amount of untreated eggs in the cast, % M±m	The amount of animated eggs in the period of storage (range) ,% M±m
1- option	90,0±0,3	900±0,6	600±0,5 Pd=0,999	0,666±0,40	0,5±0,02	0,7±0,004

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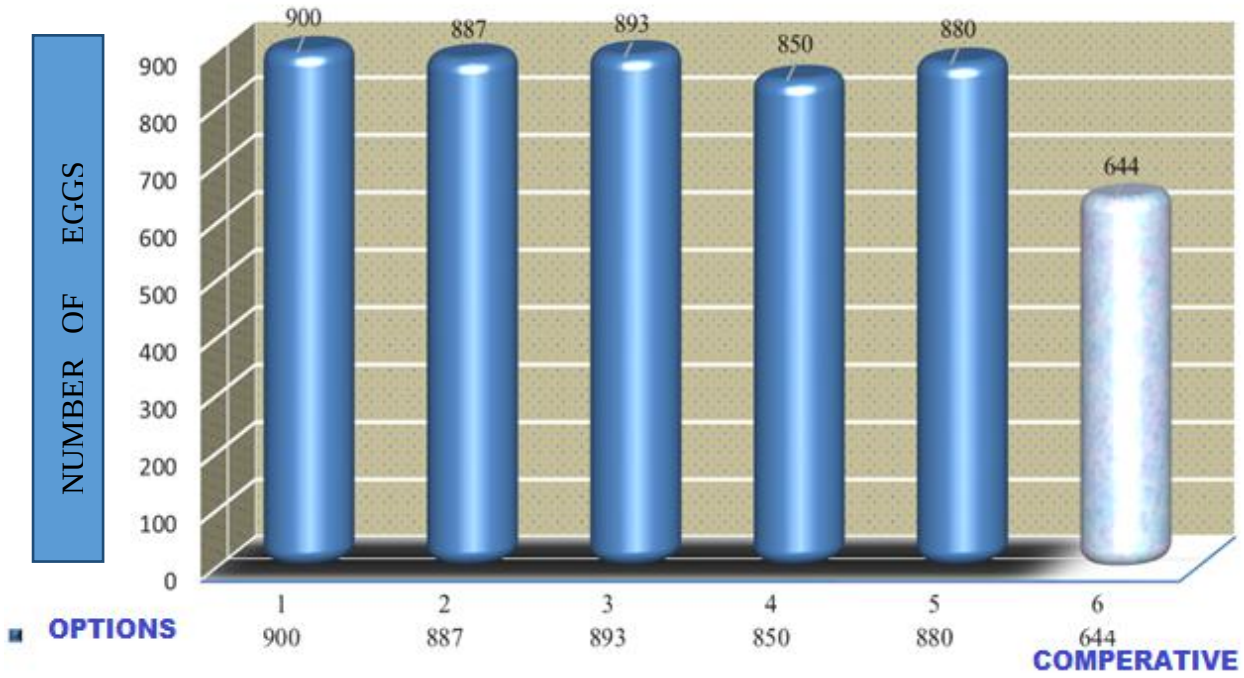
2- option	82,5±0,2	887±0,3	590±0,2 Pd=0,998	0,665±0,20	0,2±0,03	0,7±0,004
3- option	80,0±0,6	893±0,7	580±0,6 Pd=0,999	0,649±0,40	0,5±0,01	0,6±0,002
4- option	82,5±0,5	850±0,2	570±0,2 Pd=0,996	0,670±0,30	0,3±0,03	0,5±0,003
5- option	83,0±0,4	880±0,3	590±0,6 Pd=0,999	0,670±0,25	0,1±0,04	0,4±0,007
comparative kind of "Marxamat"	93,0±0,7	644±0,8	405±0,3	0,628±0,20	0,6±0,02	0,8±0,002



4-figure. Pinkness of silk worm butterflies named "Japan" from China

The egg fertility of the mulberry silk worm is the basis of the seed industry. If some breeds have eggs, some breeds do not lay eggs as much as others. Especially the female butterflies of the breed, which weave a high silky coat, germinate less. At the same time, according to agrotechnical rules, the care of worms can affect the fertility and quality. In our experiments, we determined the reproductive performance of these breeds for the importance of breeding butterflies, obtained in 5 different variants of "Chinese" and "Japanese" breeds used.

It can be seen that the mulberry silk worm breeds from abroad are not only biological indicators, but also the pinkness of Butterflies is high. In the manifestation of this important sign, it has found its own proof that the care of worms at a temperature of 25-270S and 75-80% humidity is of great importance.

We can see this clearly in the weight of the castings put on butterflies and in the amount of eggs in the cast. For example, if the weight of one cast is 610-650 mg (Pd=0,998) in the "Chinese" breed, then in the "Japanese" breed it is 570-600 mg (Pd=0,996). In comparative breeds, this figure was 480-405 mg.

When we analyze the amount of self-animated castings by breeds, we see a small amount of self-animated seeds in all castings. This can be caused by the participation of bivaltin breeds

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in the selection process of creating these breeds. These breeds, by their biological indicators and the breeding of butterflies, have now demonstrated their superiority over the native silk qurtlari breeds that are being fed to obtain offspring in production.

Conclusions

Analyzing the results of the research conducted on the effect of sharply different temperatures and relative humidity of air on the revival of the eggs of the silk worm, we can conclude the following.

The productivity of mulberry silk worm breeds "China" and "Japan" from the people's Republic of China, the pinkness of butterflies, as well as the manifestation of the technological indicators of the dry plank, have found evidence of their dependence on the technology of optimal care.

It was based on the fact that external environmental factors, temperature and humidity are higher or lower than the requirements of agrotechnics at the exit of butterflies from the breeding grounds negatively affect the quantity and quality (percentage of seeds with physiological defects) of seeds of silkworms.

It is recommended for use in the preparation of fertile duragay seeds from the breeds "China" and "Japan", which belong to the Chinese selection, as well as for obtaining high-quality silk fibers.

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