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Influence of feeding of silkworms in Uzbekistan on cocoon yield and variety

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Abstract

This article examines the negative impact of environmental factors (temperature, humidity, light, air exchange, nutrient content) on silkworm productivity and silkworms of dry and live elephants during the resuscitation and feeding of silkworm seeds and hybrids imported to Uzbekistan. Experiments have been carried out for several years in the laboratory of the Department of "Silk and Mulberry" of Tashkent State Agrarian University, as well as in Jizzakh and Fergana regions with different climatic conditions to improve the productivity of silkworms.

Keywords: Silkworm breeds, ingots, biological and technological indicators, silk fiber, cocoon mass, silkworm hybrids, silk fiber density, continuous silkworm weeding, silk fiber metric number, dry cocoon, live cocoon, silkworm revival, cocoon residue.

Introduction

Today, the demand for cocoons, natural silk and silk fabrics in the world market is growing day by day. At present, mulberry silkworm eggs are produced in more than 20 countries where silk production is developed, and 14.5 million silkworm eggs are produced. box People's Republic of China, 5.0 million. box India, 300,000 boxes Uzbekistan and the remaining 3.2 million. the box corresponds to the share of other states" [7]. Uzbekistan is the third largest cocoon producer in the world, producing an average of 59.0 kg of cocoons per box of silkworm seeds. The geographical location of Uzbekistan is currently a favorable ecological zone for the cultivation of silkworms, and more than 380-400 thousand boxes of silkworms are cared for annually [4, 6].

Research is being carried out around the world to create breeds and hybrids of mulberry silkworms suitable for different regions, as well as to develop new innovative agro-technologies in silkworm breeding. In this regard, given the global climate change, the creation of breeds and hybrids of mulberry silkworm adapted to rapidly changing and optimal climatic conditions, the development of intensive new technologies for their care and the introduction of foreign breeds and hybrids is of great scientific and practical importance [3, 5].

Certain results are being achieved in the creation of local breeds and hybrids adapted to the specific climatic conditions of the republic. However, insufficient attention has been paid to the development and scientific substantiation of optimal care agro-technologies aimed at adapting imported mulberry silkworm breeds to the conditions of Uzbekistan, increasing the yield, variety and technological properties of cocoons.

Decree of the President of the Republic of Uzbekistan dated

March 29, 2017 No PP-2856 "On measures to organize the activities of the Association" Uzbekpaksanoat "and March 20, 2018" On further development of the silk industry " Extensive testing of selection achievements, development of primary breeding of mulberry silkworm breeds and hybrids, creation of breeds and hybrids in accordance with international standards through the development of advanced scientific developments and intensive agro-technologies, taking into account the natural climatic conditions of the regions. It is planned to expand the export potential of the silk industry by increasing the production of silkworms and cocoons, improving their quality [1, 2].

Research methods and materials

Along with the theoretical part of the research work, the important aspect of its practical and production is cocoon yield and its variety. Therefore, during the experiments, the yield and variety of cocoons obtained from one box of worms were determined. For this purpose, data were collected on the following indicators:

1. Total cocoon yield from one box, kg.
2. Variety of cocoons grown, %.
3. The amount of defective cocoons, %.
4. The amount of black cocoons, %.

The varietal characteristics of the cocoons were determined based on the external morphological features, appearance, shape, color, size, and defects in the cocoon level on all variants and compared with each other on the variants.

Research results and their discussion

The breeds we are studying in our research are the most productive silkworm breeds in Japan, which are the main silkworm breeds in this country. We revived high-yielding

silkworm breeds at both young and old ages and achieved the following results. These breeds have proven the superiority of their biological parameters with their short worm period, high viability, high weight and quality of cocoons. To confirm our opinion, we refer to the data in Table 1. At the same time, when caring for silkworms by variants, we can see that the worm period of the breed "Kinsyu" is reduced by 2 days compared to the comparator,

and the viability of the worms is 15-18% higher than that of the comparator. We can see from the table that the weight of living cocoons (Figure 1) is 1-1.5 times heavier than that of the comparator.

It can be seen from Table 1 that the weight of the cocoon shell ranged from 0.600 to 0.750 grams and the amount of varietal cocoons (Fig. 2) reached 85-95% and the silkiness reached 24-26%.

Table 1: Biological indicators of Kinsyu silkworm breed (2009-2018)

Options	Worm period, per day	Kurtni vitality, M ± m	Cocoon weight, g. M ± m	Weight of cocoon shell, g. M ± m	Navli pilla %	Silk %
Option 1	24,0	98,0±0,42	2,7± 0,01	0,500±0,001	93,0	23,5
2-variant	24,0	97,0±0,35	2,5±0,02	0,450±0,004	90,0	23,0
3-variant	24,0	95,0±0,42	2,0±0,04	0,450±0,001	92,0	24,5
4-variant	24,5	97,0±0,45	1,8±0,01	0,550±0,001	90,5	23,5
5-variant	24,5	92,0±0,40	1,9±0,04	0,400±0,005	88,6	24,0
Comparative breed "Asaka"	25,0	91,0±0,26	1,9±0,01	0,400±0,002	86,2	23,0

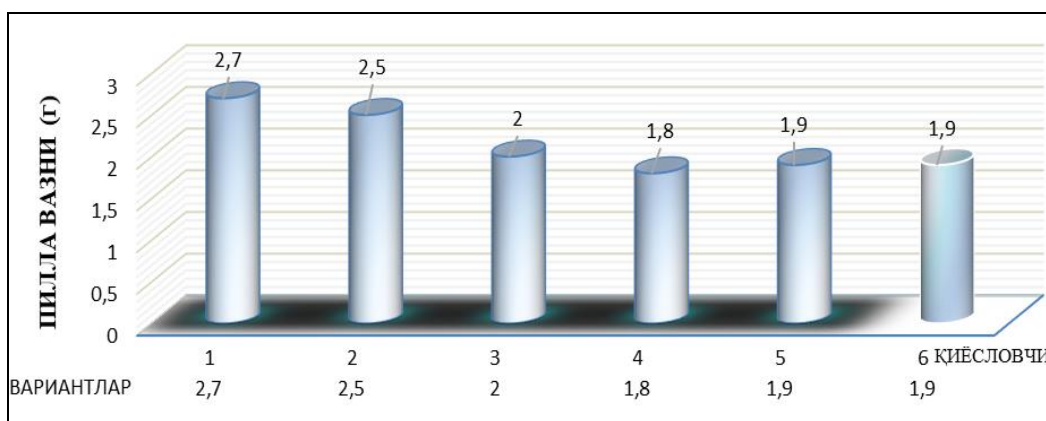


Fig 1: Kinsyu cocoon weight (g)

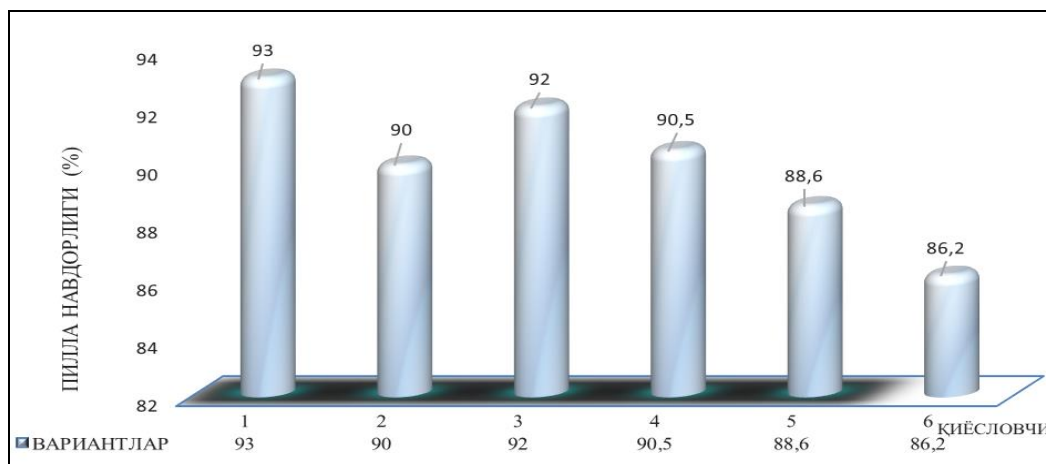


Fig 2: Kinsyu cocoon variety (%)

Based on the results presented in Table 2, the mulberry silkworm breeds imported from abroad have indeed shown their productivity. This was evident when we analyzed the biological parameters of the silkworms fed.

In both species, we can see that the biological performance of the worms is several times higher than that of the comparator. The worms in the high-viability variants proved their productivity in the weight of the cocoon and the thickness of the cocoon shell.

The productivity of new silkworm breeds is an important

indicator, which is also reflected in its silkiness. This figure was 26-27% in live cocoons. The weight of the cocoon shell was 0.500-0.650 grams.

These figures show that imported mulberry silkworms are superior to domestic silkworms, which are now widely used in production.

Kinsyu and Syova silkworm breeds have a high viability of 95%, with a cocoon mass of 1.9-2.1 grams per cocoon, and a cocoon yield of 60-65 kilograms per box.

Table 2: Biological indicators of Syova silkworm breed (2009-2018)

Options	Worm period, per day	Kurtni vitality, M ± m	Cocoon weight, g.	Options	Worm period, per day	Kurtni vitality, M ± m
Option 1	25,0	98,0±0,40	2,8±0,02	0,750±0,004	90,0	26,5
2-variant	25,0	97,0±0,20	2,5±0,03	0,720±0,004	95,0	27,0
3-variant	25,0	92,0±0,40	2,0±0,01	0,650±0,002	90,0	24,0
4-variant	25,0	88,0±0,30	1,9±0,03	0,500±0,003	88,5	24,5
5-variant	25,0	85,0±0,25	1,8±0,04	0,450±0,007	86,0	24,0
Comparative breed "Marxamat"	25,0	84,0±0,20	1,8±0,03	0,425±0,002	87,2	23,5

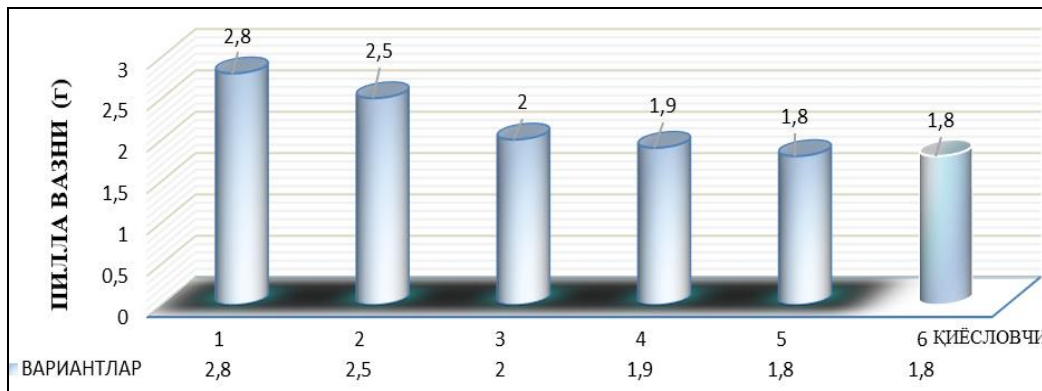


Fig 3: Cocoon weight of Syova breed (g)

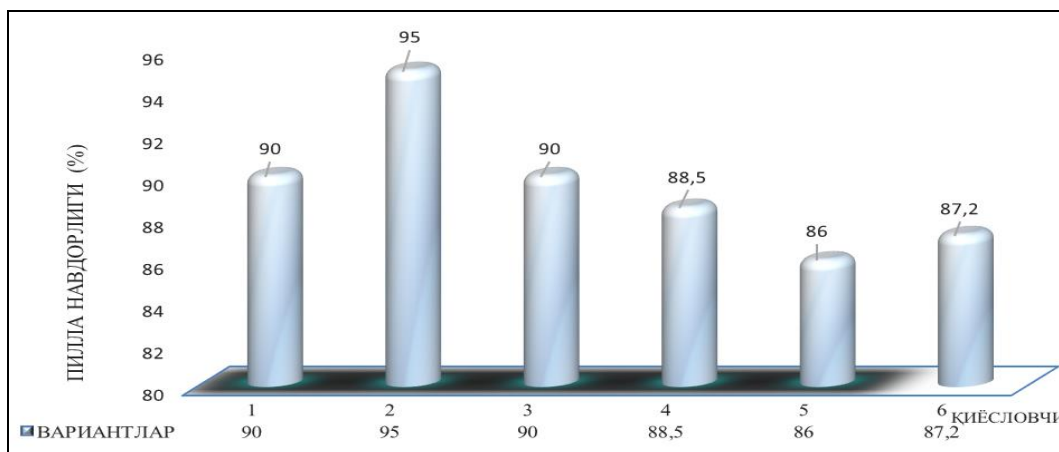


Fig 4: Cocoon variety of Syova breed (%)

Conclusion

As a result of research work, we came to the following conclusion on the impact of feeding high-yielding silkworm breeds and hybrids imported from abroad on the yield and variety of cocoons.

The productivity of mulberry silkworm breeds "Kinsyu" and "Syova" imported from Japan, the emergence of butterflies, as well as the demonstration of the technological parameters of the dry cocoon depend on the optimal care technology.

It was observed that the biological performance of cocoons decreased when the worms revived from the seeds of the Japanese silkworm were fed at varying temperatures and humidity.

It was found that the feeding of imported silkworm breeds and hybrids at different temperatures and humidity leads to a decrease in the total number of cocoons by 20-22%, and an increase in the number of cocoons by 6-7%.

The yield of raw silk from dry cocoons of Kinsyu and Syova breeds under optimal conditions was 44.33% and 41.17%.

The continuous spinning length of the silk fiber was 1150 m, 1160 m, and the fiber thickness was 0.327 and 0.334, respectively.

In order to fully demonstrate the biological potential of foreign breeds in Uzbekistan, the air temperature should be 25-27°C, relative humidity should be 80-85% and the feeding plan should not fall below the norm (1000 kg).

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