RESULTS OF MICROSCOPIC ANALYSIS ON DETERMINATION OF FAMILIES RESISTANT TO PEBRINA AND NUCLEAR POLYHEDROSE DISEASE OF MULBERRY SILKWORM

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Abstract. *The main task of these studies is the selection of genotypes resistant to yellow disease. Therefore, in order to accurately assess the disease resistance of families, individual butterflies of all casts, breeds and systems were analyzed under a microscope.*
Keywords: *selection, pebrina, butterfly.*

The development of silk production in the republic has an ancient and extremely interesting history, for example, there is evidence that the practice of silk spinning existed in the Fergana Valley in the south of Uzbekistan, as well as at the source of the Zarafshan River, 4000 BC. years ago. Its rich traditions, climate, population density, as well as the abundance of culinary resources in the countryside make it a very promising area for investment.

Uzbekistan ranks third in the world in terms of raw silk production and accounts for about 2% of world production.

Thanks to the reforms implemented in the next five years, the silk industry in Uzbekistan developed rapidly. In 2016-2020, the production of silk gauze increased 4 times, the export of silk products increased 3.5 times, and the export of silk gauze increased 50 times, which ensured that Uzbekistan took the 6th place in the world in this regard.

The development of the silk industry in our republic and the production of abundant and high-quality cocoons from silkworms are closely related to the prevention of silkworm diseases. The quality of the seeds prepared from silkworms reared in farms is considered an important factor in preventing the spread of diseases and producing high-quality cocoons [2].

The incubation period of jaundice consists of two stages. The first virions leave the polygon and enter the cell, and in the second stage clinical symptoms of the disease are formed [5].

When the virus is in a latent state, it does not harm insects, does not show visible signs of the disease, that is, transphase-vertically passes from the larval stage to the imago stage [7]. Various negative physical and chemical effects weaken the activation of the latent virus of the worm. The insect becomes infected and dies and spreads the infection horizontally, eventually leading to their death during the feeding period [4].

Under a microscope, because the polygons strongly refract light, they look like oil droplets, which are difficult to distinguish from many oil globules without an expert. But because polyhedra have more faces than fat globules, they can be seen by turning the microscrew of a microscope. If you look closely, the periphery of polyhedra is brighter and less dense than the center of consistency [3], [8], [6].

According to the above authors, the activation of latent infection can be caused by high or low temperature during the feeding period of the worm house, high humidity, very dense

arrangement of worms, poor quality feed, physical and chemical effects. Such reasons may be related to the hot and cold effects of long-term (more than 120 winter days) storage of mulberry silkworms in freezers.

According to some data, some protein and enzyme preparations (alkaline and pancreatic DNAs, pepsins) cause activation of yellow disease viruses in buds of mulberry silkworm US-1 breed and US x B-2 hybrid. The frequency of induction, indicating the percentage of death of worms, was 26.5-24.5% in the first case, and 58.1-47% in the second ca

Table 1

Percentage of diseased and healthy casts of mulberry silkworm by breed and system (2023)

Silkworm breed and systems	Number of butterflies analyzed (♀ & ♂)	Number of sick butterflies, pcs				with nuclear polyhedrosis butterfly %	Healthy butterfly %
		with pebrina	with nuclear polyhedrosis	With bactery	healthy		
YA-120	544	6	30	-	508	5,5	93,4
Ipakchi 2	727	19	45	-	663	6,2	91,2
Ipakchi 27	873	18	63	20	772	7,2	88,4
Ipakchi 28	610	13	27	3	567	4,4	92,9

According to the data in Table 1, the experimental breeds and systems had different indicators of resistance to yellow disease, but no sharp observations were observed between breeds and systems. The percentage of butterflies infected with yellow disease was 5.5% in the Ya-120 breed, 6.2% in the Ipakchi 2 breed, and 7.2% and 4.4% in the Line 27 and Line 28 systems, respectively. The index of butterflies infected with Pebrina also confirms that the breeds are resistant to yellow disease.

For example, the number of butterflies infected with pebrina was 6 in Ya-120 breed, and 13 in Line 28. According to the analysis of the casts' resistance to bacteria, no bacteria were observed in casts of Ya-120 and Ipakchi 2 breeds. In the studied samples of Line 27 and Line 28, 20 and 3 bacteria were detected, respectively. Figures 4.5.1 and 4.5.2 show the proportion of diseased and healthy worms in mulberry silkworm Ya-120, Ipakchi 2 breeds, Line 27, Line 28 systems.

According to the figures in Figure 2, the percentage of healthy butterflies is higher in Ya-120 (93.4%) and Line 28 (92.9%), and the lowest percentage of healthy butterflies is shown in Line 27 (88.4%).

According to preliminary data, the most disease-resistant breeds

this can be considered as a breed of Line 28 and Ya-120. Experiments to determine the resistance of the breed and systems to yellow disease were also carried out in the option of family rearing. Among the families of the mulberry silkworm breeds and systems, selective breeding casts were obtained.

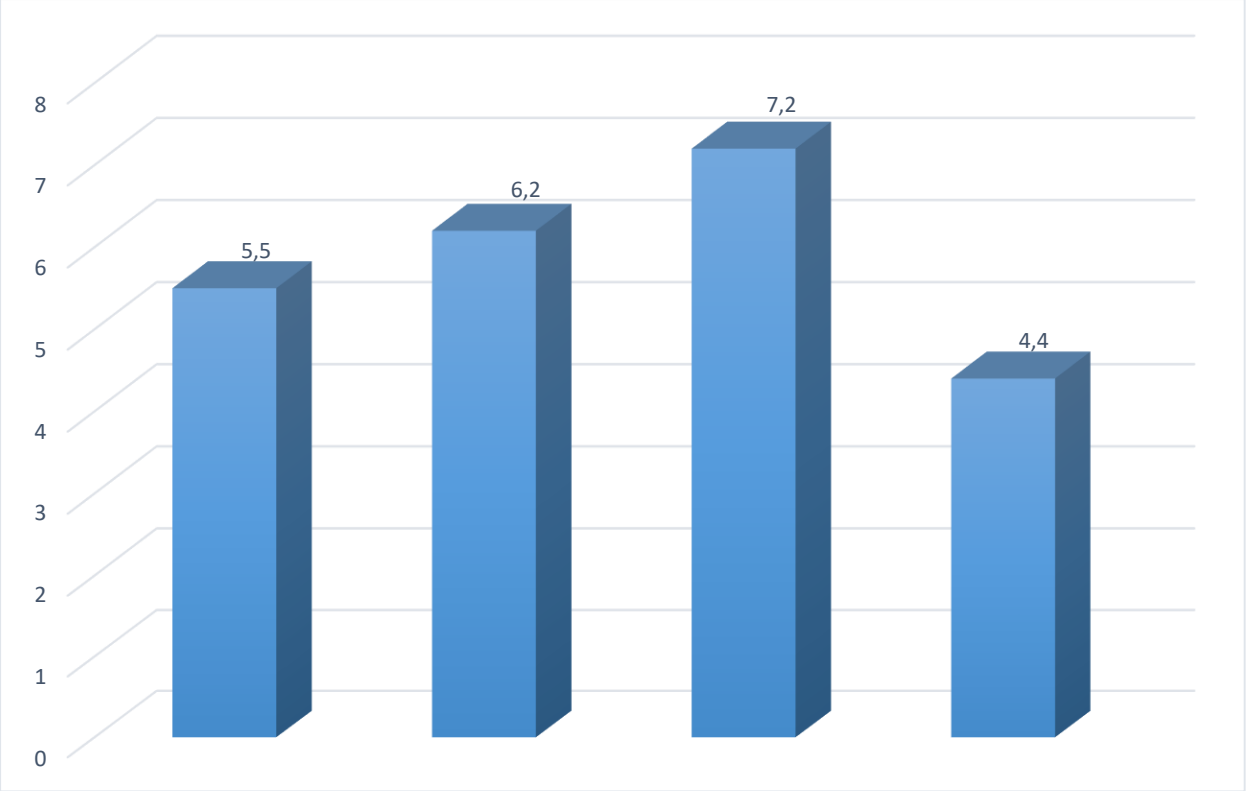

Diagram 1. Proportion of butterflies with nuclear polyhedrosis

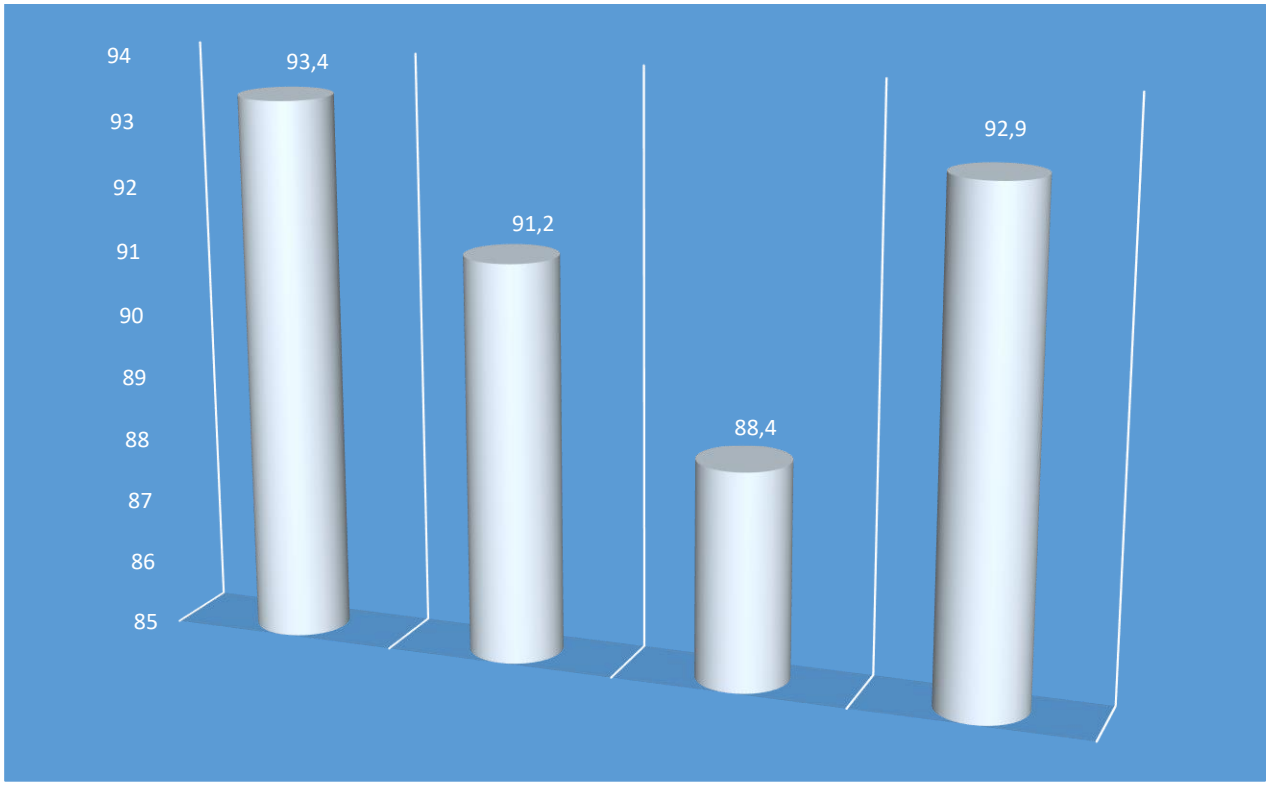

Diagram 2. Percentage of healthy butterflies in breeds and systems

In order to determine the most disease-resistant families, selection families' resistance to yellow disease was analyzed. For this purpose, healthy burns in each family were identified, and the most resistant families were identified according to this indicator. Indicators on the amount of healthy casts in breeds and systems are presented in Table

Table 2

Nuclear polyhedrosis of breed and systems of healthy families number of seats

YA-120			Ipakchi 2			Liniya 27			Liniya 28		
Family seats	Fam. num	Heathy worm pcs	Fa miseats	Fam. num	Heathy worm pcs	Fam seats	Fam. num	Heathy worm pcs	Fam seats	Fam. num	Heathy worm pcs
10	1	10	12	1	11	13	1	17	13	1	8
9	2	11	13	2	9	16	2	7	12	2	9
2	3	22	8	3	18	12	3	18	11	3	11
8	4	12	1	4	28	3	4	31	10	4	13
12	5	7	2	5	26	15	5	11	14	5	6
9	6	11	7	6	20	8	6	25	9	6	14
1	7	27	10	7	14	7	7	26	5	7	18
3	8	17	3	8	25	2	8	33	8	8	15
9	9	11	5	9	23	9	9	22	3	9	24
14	10	4	9	10	17	5	10	28	4	10	21
13	11	5	5	11	23	16	11	7	16	11	3
9	12	11	12	12	11	4	12	30	14	12	6
6	13	14	6	13	21	10	13	21	4	13	21
7	14	13	4	14	24	11	14	20	15	14	5
4	15	16	2	15	26	1	15	35	2	15	25
5	16	15	11	16	13	6	16	27	6	16	17
12	17	7	3	17	25	8	17	25	7	17	16
9	18	11	14	18	7	3	18	31	1	18	27
11	19	8	13	19	9	17	19	4	10	19	13
5	20	15	2	20	26	14	20	14	17	20	-
total		∑=247			∑=376			∑=432			∑=272

The analysis of the data presented in Table 2 shows that among breeds and systems, breeding families differ sharply in terms of the number of healthy litters. Among the Ya-120 and Ipakchi 2 breeds, the number of healthy litters was 247 and 376 pieces, in the selection systems Line 27 and Line 28, this indicator was 432 and 272. In the researched litters of the Ya-120 breed, families numbering 7, 3, 8 took the first place out of 3 in terms of the number of healthy litters. Families numbering 4, 5, 8 took the top places in Ipakchi 2 breed. Line 27, Line 28 systems have high indicators of families numbered 15,8,4 and 18,15,9, respectively. The above 12 identified families are the most resistant genotypes to yellow disease (nuclear polyhedrosis).

Conclusions:

- in the creation of the primary selection material for the production of systems resistant to the yellow disease of the mulberry silkworm, the breeders of the institute recommended 2 Japon-120, Ipakchi 2 breeds and 2 Line 27, Line 28 systems with alternative differences from each other;

- breeds and systems participating in the experiment reacted differently to cold induction. For example, in the Ya-120 and Ipakchi 2 breeds, the cocoon and shell mass is between 1.54-1.65 g and 326-344 mg, respectively, while in the Line 27 and Line 28 systems, these indicators are low, 1.39-1.41 g and is 312-336 mg;

- the percentage of butterflies infected with the disease of the scrotum was 5.5% in the Ya-120 breed, 6.2% in the Ipakchi 2 breed, and 7.2% and 4.4% in the Line 27 and Line 28 systems, respectively;

- according to the research results, the percentage of healthy butterflies is higher in Ya-120 (93.4%) and Line 28 (92.9%), the lowest percentage of healthy butterflies is shown in Line 27 (88.4%);

- Among the Ya-120 and Ipakchi 2 breeds, the number of healthy litters was 247 and 376, and in the selection systems Line 27 and Line 28, this indicator was 432 and 272;

- 12 families selected as the healthiest from 2 (Ya-120, Ipakchi 2) breeds and (Line 27, Line 28) systems are the most resistant genotypes to yellow disease (nuclear polyhedrosis).

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