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Effect of Biostimulators on the Productivity Indicators of Mulberry Silk Cow

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Annotation: By enriching the leaves of the mulberry silkworm hybrids grown for industrial purposes with 0.001% mulberry leaf (AIH-10) in the IV-V years, it was possible to increase the average cocoon weight, which is one of the silkworm productivity indicators, to 1.80 grams, by 7.3% compared to the cocoons of the comparative variant (1.67 g), the cocoon shell weight to 42 mg, and the silkiness to 0.8%.

Keywords: mulberry silkworm, breed, hybrid, cocoon, leaf, biostimulant, cocoon, silkiness.

Innovative scientific research is being conducted worldwide to scientifically substantiate new technologies for cultivating mulberry silkworms in various climatic conditions. Leading scientists from countries with developed sericulture, such as the People's Republic of China, India, Vietnam, and Brazil, have conducted a number of scientific studies on the creation of fine-fibered breeds and hybrids based on monovoltine breeds of mulberry silkworms, bringing cocoon productivity and its technological indicators to the level of world standards. In recent years, as a result of the sharp change in climatic conditions on Earth under the influence of anthropogenic and environmental factors, the creation of breeds and hybrids with high cocoon productivity that are adapted to extreme conditions is a pressing problem.

In the resolutions of the President of the Republic of Uzbekistan dated March 29, 2017 No. PP-2856 "On measures to organize the activities of the Uzbek Silk Industry Association", dated January 12, 2018 No. PP-3472 "On measures to further develop the silk industry of the Republic"

and dated January 12, 2018 No. PP-3472 “On measures to further develop the silk industry in the Republic”, dated August 20, 2018 No. PP-3910 “On measures to more effectively use existing opportunities in the silk industry in the Republic”, dated December 4, 2018 No. PP-4047 “On additional measures to support the accelerated development of the silk industry in the Republic”, technical and technological modernization of silk enterprises production, cocoon processing, silk fiber spinning, creating silk fabrics from semi-raw silk fiber, processing cocoon residues, production of silk fluff, quality and quantity of products such as ready-made clothes, household goods, fine silk carpets and increasing the export capacity of the industry several times.

For the normal development of silkworms, a sufficient amount of high-quality mulberry leaves is required. Under production conditions, mulberry leaves lose some moisture during transportation from the mulberry fields, during preparation, and before being fed to the worms. Studies by S. Jalilov, H.S. Khomidii, and others have shown that in order not to reduce the productivity of silkworms, it is necessary to maintain the natural water content of the mulberry leaves, store the mulberry leaves in cool, high-humidity rooms, spray them with clean water, and wrap them in polyethylene or moistened bags. Treating mulberry leaves with clean water is the simplest stimulant for increasing silkworm productivity [36].

T.Ya. Kuchugurova, R.S. Grebeshchenko [38] conducted experiments at the Kyrgyz Experimental Station using coordination compounds of cobalt-35 (0.005 and 0.01% concentrations), copper-10 (0.05-008%) and copper-52 (0.005%). The solution was sprayed on mulberry leaves, which increased the yield from 1 gram of caterpillar by 6.4%.

Recently, a group of scientists led by B.U. Nasirillaev, who have been working in our republic, is conducting scientific research on the use of biologically active compounds obtained from cotton and a number of biological stimulants. Biologically active compounds obtained from cotton contain antioxidants, which increase the productivity and viability of the cocoon, and also help in the assimilation of feed. The drug accelerates the accumulation of organic substances in the body of the worm and, under their influence, accelerates physiological processes and metabolism.

A number of scientists from the Institute of Microbiology and the Academy of Sciences of Uzbekistan used the drug "Baraka No. 82" in feeding silkworms, which consists of mineral substances, and according to the instructions, one tablet is enough for 10 liters of water. Mulberry leaves are moistened with the prepared suspension and given to the silkworm after 10 minutes. The vitality and productivity of the silkworms increased significantly.

Mulberry silkworms of the Ipakchi1×Ipakchi2 hybrid were fed mulberry leaves moistened with an aqueous solution of the drug AIH-10 at 0.01%; 0.001%, 0.0001% at the age of 4-5 years. The aqueous solution was evenly sprayed onto the collected mulberry leaves with a special sprayer. The solution was wrapped in polyethylene film for 5-10 minutes to allow the mulberry leaf to absorb the water. Then, only after the wet leaf was soaked in water, it was given to the mulberry silkworms at the age of 4-5 years. The comparative variant was fed with mulberry leaves moistened with plain water. In conducting scientific research, mulberry silkworms were fed in the experimental and comparative variants in a four-fold repetition of 200 pieces for each variant. Mulberry silkworm feeding was carried out under production conditions. The following agrotechnical rules were observed: When feeding mulberry silkworms, the temperature and humidity in the wormery were 26-27 °C for young ones (I-III years) and 67-75% humidity for older ones (IV-V years) and 24-25 °C and 60-70% humidity, and during the cocooning period, the temperature was 24-25 °C. Humidity was maintained at 60-70%. In the control variants, simple leaf feeding was used. The data obtained as a result of the experiment are presented in the first table.

Table 1. shows the effect of AIH-10 on the productivity indicators of mulberry silkworms of the Ipakchi1×Ipakchi2 hybrid when they were sprayed with the drug AIH-10 on mulberry leaves at the age of 4-5 years.

Options	Average weight of one cocoon, g.	The average weight of the silk cocoon, mg.	of cocoons Silkiness, %.
Option 1 (АИХ-10) 0,01%	1,78±0.01	379±3,5	21,3±0,2*
Option 2 (АИХ-10) 0,001%	1,80±0,01	407±1,9	22,6±0,2*
Option 3 (АИХ-10) 0,0001%	1,66±0,01	367±23,5	22,1±0,3*
Option 4 (comparative)	1,67±0,01	365±3,2	21,8±0,3*

Pd= 0,999

The table shows that when mulberry silkworms of the Ipakchi1×Ipakchi2 hybrid were sprayed with 0.001% of the drug in the second variant (AIH-10) on mulberry leaves in the IV-V years, the average weight of one cocoon was 1.80 grams, which is 7.3% more than the cocoons in the comparative variant (1.67 g). At the same time, the weight of the cocoon shell increased by 42 mg, and silkiness increased by 0.8%. It was found that the average weight of a single cocoon in the 1st experiment, grown with leaves impregnated with a 0.01% solution of the AIH-10 preparation, was 1.78 grams, which was 6.2% more than the cocoons in the control variant (1.67 g), and the average weight of a single cocoon in the 3rd experiment, grown with leaves impregnated with a 0.0001% solution of the AIH-10 preparation (1.66 g), decreased by 0.6% compared to the control variant. We can conclude the following from our experiments. By enriching the leaves with the AIH-10 preparation, one of the indicators of silkworm productivity can be increased by an average of 7.3%, the weight of the cocoon shell by 42 mg, and the silkiness by 0.8%.

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