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To the problem of struggle against the nosematosis of the mulberry silk worm in Uzbekistan

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Abstract
Based on the studies carried out over the last 9 years, the Cadastre of sorts has been created, which provides the characteristics of 45 breeds tested for resistance to nosematosis and nuclear polyhedrosis. The use of this Cadastre in selection work for the creation of industrial hybrids promotes the creation of hybrids not only with high technological and biological indicators, but also resistant to diseases. One of the approaches to solving this problem was the use of very high resistance to diseases in polyvoltine kinds with a high yield of silk in m onovoltaic kinds. This line of research is promising, and the field of struggle against nosematosis remains relevant for sericulture in Uzbekistan.

Keywords: Silkworm, caterpillars, cocoon, nosematosis, spore, grena

Introduction

Sericulture in Uzbekistan is one of the traditional branches of agriculture. Among the main countries producing silk, Uzbekistan ranks third in the world, after China and India. Over the past year, more than 454 thousand 600 boxes of mulberry silkworm grena were grown, with an average of 57.6 kg of cocoons per box. There were prepared more than 26 thousand tons of raw silk.

Among the existing infectious diseases of the silkworm in Uzbekistan, as the most dangerous is recognized nosematosis. The danger of protozoal disease - nosematosis is caused by Transovarial transmission of the pathogen to the next generation.

The search for ways to solve the problem of nosematosis has long been undertaken by many scientists (L. Paster, 1870, Poyarkov, 1956, Khakhanov, 1956, Astaurov *et al*, 1972, etc.) [11, 1]. Their efforts created a certain system for protecting silkworm from sickness, including the method of culling infected eggs with the help of microscopy of butterflies - females, thermal processing of the genes and pupae, and conducting sanitary and preventive measures.

However, the situation in the silkworm breeding of Uzbekistan, created in the last three decades of the last century, indicated that the existing system does not provide the preparation of a healthy grena (eggs).

The situation dictated the need to develop other, more effective measures to combat nosematosis. The Central Asian Research Institute of Sericulture (Tashkent) in 1975 developed a concept that includes the following research areas:

- study of the epizootology of nosematosis of the silkworm;
- the search for new and more effective means of prevention;
- study the possibility of using medicines;
- search for new diagnostic methods;
- Improvement of the final stage of the fight against nosematosis - control of the grena (eggs) used in production.

As a result of studying the Epizootiology of the disease, it was established that the causative agent of nosematosis is Nosema bombycis N. - a parasite with a wide range of hosts, capable of developing in 9 species of natural insects (Kashkarova *et al*., 1980) [4]. This allowed us to develop a recommendation for preventing the infection of the silkworm by nosematosis from wild insects.

The search for prophylactic nosemacid agents active against the spore form of the pathogen showed that an organic acid possessing tannic properties deserved a positive evaluation from

a large arsenal of tested drugs. Its nosemacid activity is characterized by the densification of the spore shell, as a result of which there is no ejection of the polar tube with the embryo and the spores lose their viability. In production, a new disinfectant is recommended in place of formalin (Kashkarova *et al*., 1990) [5]. Also, a high efficiency of the disinfectant, a domestic product called "Septaxin", was established against the causative agent of nosematosis. This circumstance made it possible to recommend the production instead of an inefficient formalin (Kashkarova *et al*., 2008). Within a few years the drug was introduced into production.

The testing of various groups of drugs (pharmaceuticals, polymers with prolonged action, antibiotics, etc.) showed that the most active were pharmaceutical preparations from the class of nitrofuran compounds and sulfanilamides. On their basis of them complex preparations with the conditional name "Nosematol 4", "Nosematol 5" (Kashkarova *et al*., 1996) [6] were created. They have been tested for 10 years in the production of processing grena with a low degree of infection (3%), which allows to keep the rejected grena and reduce the material damage.

With the help of mathematical calculations, the imperfection of the used drugs for infection with nosematosis in the production of control has been proved.

As a result of many years of research, the stage of preliminary microanalysis (caterpillars, pupae, butterflies) has been improved for infection with the membrane, and a method for heating cocoons has been proposed instead of a continuous microanalysis of butterflies (Khakhanov *et al*., 1981) [10]. Prepared for re-fattening the grena at the age of 24-43 hours is recommended to treat complex preparation Nosematol-5", or heated in hydrochloric acid by the method of Astaurova *et al*., 1972 [1] (Kashkarova *et al*., 2004) [7].

It found that in infected in autumn by pebrina Grena (November) before the start of the winter are mostly vegetative stage pathogen not detected by our traditional microscopic technique and along with these spores may occur, especially in the eggs with a high intensity of infection (Ismatullaeva, 2001) [3].

The new control of the grena is based on the selection of optimal quantitative criteria for the selection of samples for microscopic analysis. A new instruction has been created for the preparation of silkworm grena at industrial silk grena enterprises, which makes it possible to avoid mistakes in conducting microscopic analysis (Kashkarova *et al*., 2007) [9]. Currently, the instruction is used at all grenage enterprises in Uzbekistan.

Based on the studies carried out over the last 9 years, the Cadastre of sorts has been created, which provides the characteristics of 45 breeds tested for resistance to nosematosis and nuclear polyhedrosis (Ziyaeva Ya.M., Ismatullaeva, 2013) [2]. The use of this Cadastre in selection work for the creation of industrial hybrids promotes the creation of hybrids not only with high technological and biological indicators, but also resistant to diseases.

At the International Symposium "Revival and Development of the Silkworm Industry of the Black, Caspian Seas and Central Asia" held in Tashkent in 2005, much was said about material losses in silkworm breeding due to diseases of the silkworm. It was pointed out the importance of creating silkworm breeds with high resistance to diseases.

One of the approaches to solving this problem was the use of very high resistance to diseases in polyvoltine kinds with a high yield of silk in m onovoltaic kinds.

This line of research is promising, and the field of struggle against nosematosis remains relevant for sericulture in Uzbekistan.

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