ISSN NO: 2771-8840
July 2024

Promising Breeds And Hybrids Of Silkworms For The Introduction Of Sericulture Karakalpakstan

Abdrimova Gulbahor Erimmatovna
Associate Professor, Head of the Department of Sericulture, Karakalpak Institute of Agriculture and Agricultural Technologies
Eltaeva Aygerim Azat kizi
Karakalpak Institute of Agriculture and Agricultural Technologies, 2nd year student

Annotation
Breeds from the world collection of silkworms of the NIIS, marked by sex at the grenadian stage and distinguished by high biological indicators, can be used to create 100% pure hybrids.
Key words: silkworm, breed, sex tagging, grena, biological indicators, ranks, hybrids.

Introduction

According to the International Sericulture Commission, Uzbekistan is the third largest producer of cocoons in the world (1.2% of world production), with a yield of 56.9 kg per box of buckwheat1. The geographical location of Uzbekistan makes it attractive and, at the same time, problematic for silkworm breeding, since there are zones with favorable and difficult environmental conditions in Uzbekistan.

Breeding of silkworms in areas with extreme ecological conditions and global changes in weather and climatic conditions on the globe urgently dictate the need for intensive development of new methods of selection and reproduction of plants and animals adapted to changed environmental conditions.

Of course, the Republic of Karakalpakstan differs significantly not only in terms of weather and climate, but also in terms of soil characteristics, water supply and other conditions from other regions of the country.

The creation of breeding populations that provide a normal level of growth, development, reproduction, silk productivity in less favorable conditions reflects the interests of the sericulture industry in obtaining high yields of cocoons in regions that differ significantly in zonal features.

Thus, the creation and implementation of silkworm hybrids for extreme environmental conditions is an urgent problem of sericulture.

In recent years, special attention has been paid to the quality of raw silk. The most realistic method of improving the technological properties of the produced cocoons is the creation and introduction of silkworm hybrids that meet the requirements of the processing industry.

In strange countries, the development of sericulture is given primary knowledge by the breeding and reproduction of breeds with the best technological properties.

A number of scientists in Uzbekistan have studied the textile properties of cocoons and proposed several hybrids with good technological performance.

Sericulture in Karakalpakstan also needs silkworm hybrids with high technological indicators of cocoon thread. Therefore, we considered it possible to consider other hybrids with interesting properties.

Materials and methods

The choice of the direction of research is dictated by the need to provide industrial sericulture in Karakalpakstan with new, highly productive, resistant to adverse environmental conditions of this region, breeds and hybrids of silkworms. Such a focus of work also determines the corresponding research methods: analysis, selection, approbation, selection.

The breeds and lines contained in the silkworm collection of the NIISH, as well as hybrids created in the Laboratory of Genetics and Selection of the Silkworm of the NIISH, were used in the work. The components of these hybrids are sex-labeled eggs of the C-5, C-5ngl, C-7, C-9, C-10, C-12, C-13, C-14 breeds, tagged at the caterpillar stage of the Tagged 1, Tagged 2 breeds, as well as non-sex-tagged eggs of the SANISH 30, Asaka, Marhamat, Atlas, Margilan, Ipakchi 1, Ipakchi 2 breeds and parthenogenetic clones. Work with breeds was carried out in accordance with the "Basic methodological provisions of breeding work with silkworms", which made minor changes taking into account the genetic characteristics of sex-tagged breeds and

ISSN NO: 2771-8840
July 2024

parthenogenetic clones. For example, each family of a sex-labeled breed at the grena stage was incubated separately by sex.

Research results

Discussion of the results is one of the priority sectors of agriculture Uzbekistan

- Sericulture is gradually being revived again. The diversity of natural and ecological zones in Uzbekistan urgently dictates the need for intensive development of new methods of selection and reproduction of many species of plants and animals adapted to various environmental conditions. Of decisive importance in this matter is the creation of breeds and hybrids of silkworms in less favorable weather, climatic and fodder conditions during the feeding period. The region, the northern districts of the Bukhara region, the Fergana Valley, Tashkent, Syrdarya, Jizzakh, Samarkand, Bukhara, Navoi, Surkhandarya, Kashkadarya regions differ significantly not only in weather and climate, but also in soil characteristics, water supply and other conditions. Taking into account the demands of the industry for the supply of breeds and hybrids with a high yield of silk products and increased unwinding of cocoons, silkworm scientists have created a number of breeds and promising hybrids of silkworms with high textile properties. These are the Ipakchi 3 and Line 22 breeds.

Ipakchi cocoons are 3–white, elongated with easy interception, fine-grained (Fig. 1.8.1), grain vitality is 96.98%, caterpillar vitality is 88.91%.

The breed was bred by synthetic selection by hybridization of foreign breeds with local ones, is distinguished by the homogeneity of caterpillar development and the uniformity of cocoon curling.

Rice. 1.8.1. Cocoons of the Ipakchi breed 3

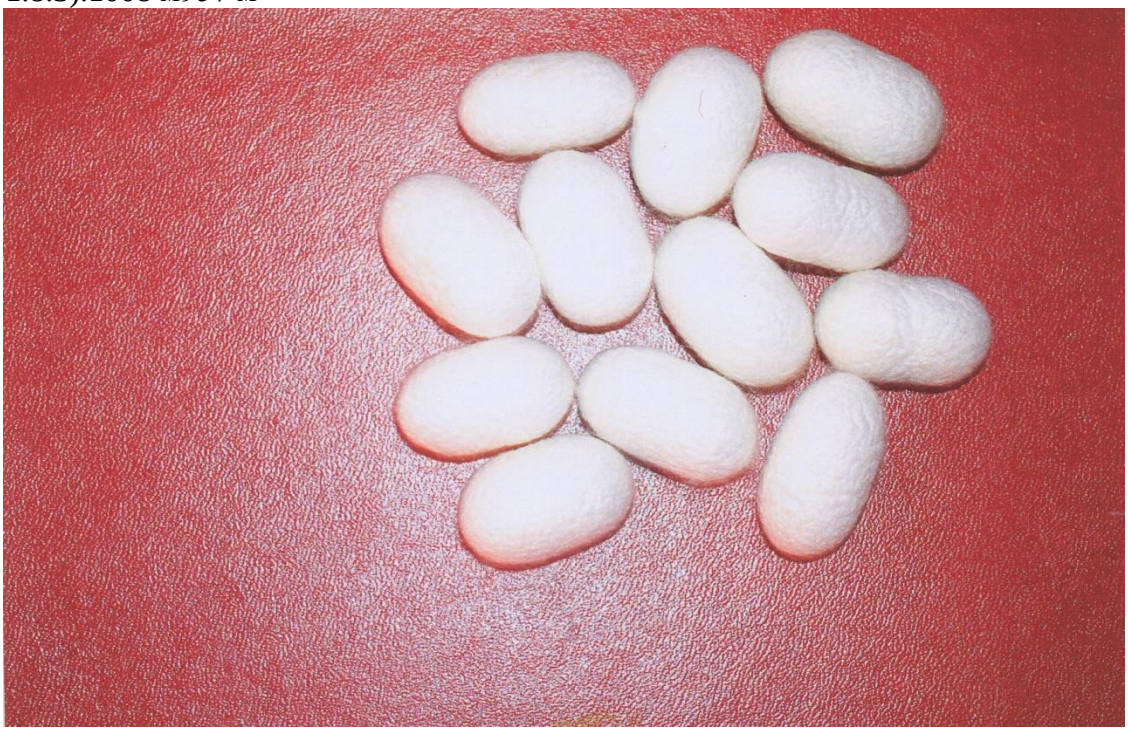
Cocoons of Line 22 are white, oval-rounded, fine-grained (Figure 1.8.2), grain vitality is 96%, caterpillar viability is 89%. The breed, bred by synthetic selection, is distinguished by the uniformity of curling cocoons.

ISSN NO: 2771-8840
July 2024

Rice. 1.8.2. Cocoons of the Line 22 breed

Hybrids between the breeds L-22, Ipakchi 3 were called Navruz-1, the reverse combination, Navruz-2.

The Navruz-1 hybrid was created at the Research Institute of Silkworm Genetics and Breeding. This is a simple hybrid obtained from crossing Line 22 x Ipakchi 3. Grena-gray ash color, the number of eggs in one gram is 1723 pieces. The percentage of grain revival is 98%, the number of caterpillars in 1 gram is 2420 pieces. Caterpillars develop evenly, climb cocoons together. The cocoons are oval, the viability of caterpillars is 90.1%, the yield of cocoons from 1 gram of caterpillars ranges from 4.0 to 4.3 kg, the silkiness of dry cocoons is 56.8%, the unwinding of the shell is 88%. Raw silk yield is 45.7%. The average length of the cocoon thread is , the length of the continuously unwound thread. The metric number of the thread is 3500 units (Fig. 1.8.3).1008 м957 м



Rice. 1.8.3. Cocoons of the Navruz-1 hybrid, zoned in production

ISSN NO: 2771-8840
July 2024

The Navruz-2 hybrid was created at the Research Institute of Genetics and Breeding of Silkworms. A simple hybrid is obtained from crossing the Ipakchi 3 and Line-22 breeds. Grena is gray-ash, the number of eggs in one gram is 1708 pieces, on the first day of revival, 97.5% of eggs come to life, the number of caterpillars in one gram is 2391 pieces, caterpillars develop evenly, they climb cocoons together, the viability of caterpillars is 89.9%. Cocoons are oval with a weak interception, fine-grained, white color without shades (Figure 3.8.4), cocoon yield from 1 gram of caterpillars is 4.73 kg, from 1 box of buckwheat - 70-. Silk-bearing capacity of dry cocoons is 55.7%, unwindability of the cocoon shell is 88.4%, yield of raw silk is 45.0, the average length of the cocoon thread, the length of the continuously unwound thread is .75 кг-1058 метра948 м
Hybrids Navruz-1, Navruz-2 do not require special zootechnical measures during feeding. Hybrids are distinguished by a high fineness of cocoon thread - metric number Navruz-1 -3400 units, Navruz-2 -3300 units.

Rice. 1.8.4. Cocoons of the Navruz-2 hybrid, zoned for production

In small volumes, hybrids Navruz 1, Navruz 2 were fed in Karakalpakstan. The results are encouraging (Table 3.7.2). The high yield of hybrids Navruz 1, Navruz 2 - 58.0 and 62.0 kg in comparison with the control - gives reason to recommend them for feeding in the industrial conditions of Karakalpakstan.45,1 кг
In 2012-2023, some hybrids were fed in various regions of Uzbekistan. The results are shown in Table 1.8.3.

ISSN NO: 2771-8840
July 2024

Table 1.8.3
Information on the indicators of new hybrids of silkworms in production conditions in 2012-2023

Name of hybrids	Fed gus., cor.	Total cocoons collected, g	Environments. Harvest. Cocoons, %	Varietal cocoons, %	Raw silk yield, %	Length of the thread, m		Metric thread number
						Total	NSD	
Andijan region								
Mec.1 x Mec.2	100	6,5	65,0	94,6	44,4	1203	416	3090
Meth.2 x Mec.1	100	5,6	56,0	93,4	43,9	1186	574	3072
Tetrahybrid 3	4-63	232,2	57,3	89,1	39,7	914	331	2810
Tashkent region								
51.40 PCs x P-5	97	5,1	52,0	82,2	37,41	962	534	2990
Mec.1 x Mec.2	75	3,8	50,3	84,1	39,73	1103	641	3058
Meth.2 x Mec.1	70	3,5	50,6	84,1	38,78	1092	633	3001
Tetrahybrid 3	21567	1069,1	49,6	79,5	33,17	812	316	2782
Bukhara region								
Mec.1 x Mec.2	54,1	33,3	61,6	93,8	40,2	986	491	-
Meth.2 x Mec.1	330	20,6	58,9	94,5	41,0	1010	534	-
Tetrahybrid 3	45928	2096,4	46,3	87,9	36,3	715	302	-
Jizzakh region								
Mec.1 x Mec.2	316	15,4	48,6	94,9	43,41	1180	1054	2896
Meth.2 x Mec.1	249	13,9	55,7	95,5	41,85	1100	942	2819
S-13 x S-14	60	3,3	52,2	90,7	42,07	1250	1061	2851
S-14 x S-13	80	3,1	51,4	89,2	42,63	1226	1007	2885
Tetrahybrid 3	6985	352,1	50,4	81,1	32,43	734	371	2450
Fergana region								
51.40 PCs x P-5	100	5,9	58,8	90,1	39,3	1041	723	2832
Mec.1 x Mec.2	560	38,3	68,4	92,2	42,3	1215	953	2962
Meth.2 x Mec.1	340	22,8	67,1	91,3	42,9	1268	1013	2976
S-13 x S-14	120	8,4	70,1	89,6	43,2	1193	834	2912
S-14 x S-13	120	8,5	69,6	91,4	42,2	1210	996	2983
Tetrahybrid 3	37959	2148,8	56,6	87,1	32,1	844	396	2843

ISSN NO: 2771-8840
July 2024

Table 3.8.3 shows that hybrids created using sex-labeled breeds and parthenogenetic clones showed yields higher than the control ones (from 48.6 kg for Tagged 1 x Tagged 2 in Jizzakh region to S-13 x C-14 in Fergana region, with control yields from 46.3 in Bukhara region to Andijan region). This indicates the high viability of hybrids with genetic rearrangements in genomes under production conditions. This means that the use of highly productive, highly viable, genetically modified silkworm breeds in industrial feedings can bring economic benefits and significantly reduce operations for separating material by sex. Hybrids Tagged 1 x Tagged 2, Tagged 2 x Tagged 1, 51.40pcs x S-5, S-13 x S-14, S-14 x S-13 can also be recommended for sericulture in Karakalpakstan.70,1 кг57,3 кг

Findings

In mulberry trees, especially in ecologically unfavorable regions, there are mutations that ensure the adaptation of plants to changed growing conditions. In Karakalpakstan, 65-70 years ago, the Aral Sea was next to Nukus, and now the sea has moved away from Nukus for about 150-160 km. allowing plants to adapt to changing conditions, propagate and use them to breed new high-yielding mulberry varieties.

Bibliography

1. Azimov S.G. Breeding work in poultry farming. Publishing house "Uzbekistan".- Tashkent, 1980.- P.9-61.
2. Abdukayumova N., Larkina E.A. Prospects for the use of gender-tagged rocks at the stage of grain of the world silkworm collection. Zh. "Young Scientist" No50, part 1. Moscow, Russia 2018.
3. Larkina E.A., Yakubov A.B., Daniyarov U.T. – Catalogue. Genetic fund of the world collection of silkworms of Uzbekistan. Tashkent, 2012a.
4. Merkurieva B.K. Biometrics in selection and genetics of agricultural animals. Moscow, 1970, pp. 141-144.
5. Nasirillaev U.N. Genetic foundations of silkworm selection [Genetic foundations of silkworm selection]. Publishing house "Fan", - Tashkent, 1985.- P.3-50.
6. Akizhikov Y.S. New methods of increasing the shelkonose of tribal parties of cocoons at grenzavods. Intensive methods of growing mulberries and silkworms. Sb.nauch.tr.TashSKHI – Tashkent, 1990. – P.66-68.