

## **The importance and role of sericulture development and silkworm breeding in the economy of Azerbaijan**

**\*Bakirov Quduret Mammad, Shukurova Zarintaj Yusif, Mustafayev Agil Gulmammad**

*Sheki Regional Scientific Center, Azerbaijan National Academy of Sciences, 24 L.Abdullayev Str., Sheki AZ 0055, Azerbaijan*

**\*For correspondence:** *quduret.bekirov@mail.ru*

Received: March 01, 2022; Received in revised form: March 11, 2022; Accepted: April 08, 2022

**There are special importance and role of Sericulture development and Silkworm breeding in the economy of Azerbaijan. The development of this sector will resolve the unemployment problem in Azerbaijan and its regions, provide the residents with enough jobs, and will result in the promotion of the welfare level and financial situation of people that will significantly contribute to the solution of socio-economic problems in the region.**

**Keywords:** *Silkworm, feeding, wet cocoon, dry cocoon, raw silk*

Sericulture is one of the most ancient fields of agriculture. Hundreds of years ago, the “Silk Road” had an important role in the development of commercial ties between the eastern and western countries in the world.

The famous historian, Adalat Tahirzada, in his work, “the Historical Sources of Shaki” stated that different regions of Azerbaijan, especially Shamakhi and Shaki, had been globally well known for their qualitative silk industry during ancient years. Shaki and Shamakhi have had a long history of establishing silk trading ties with Iran, Russia, Arabic, and European states for a long period of time (Tahirzada, 2005).

According to sericulture scientists A.K.Seyidov and B.H.Abbasov in their work, “Principles of Sericulture”, the silk produced in Azerbaijan has been one of the main merchandises of the country during the XII-XIV centuries. The fame of this merchandise has been even promoted during XVI-XVII in Italy, French, Russia, Iran, Turkey, and other European and Asian countries (Saidov, 2012).

In his work, “The Methods of Improvement of Economic Incomes of Sericulture”, R.Hajiyev stated that besides the determination of economic profits of sericulture in Azerbaijan, the factors effective in the promotion of the sector should also

be identified and the local possibilities with a positive effect on these factors should be addressed as well (Hajiyev, 1966).

A.M.Qambarov in his book, “Sericulture and Silk Industry in Azerbaijan”, has stated that the organizations dealing with sericulture and silk production should extensively apply more effective utilization of sericulture products (Qambarov, 1965).

In their research work, “the Study of Some Issues in Regard of Raw Material Economy in Azerbaijani Textile Industry”, M.B.Taghiyev and Z.T.Mammadov state that the replacement of old machinery and equipment with the new ones not only will promote the preparations for cocoon unwinding and reeling processes but also will result in labor productivity increase by 50-60% and this will eventually lead to a decrease of productions costs by 40% (Taghiyev, 1962).

The silkworm breeders have their unique role development of the Azerbaijani sericulture industry in course of the history and the industry played a significant role in the promotion of breeders’ welfare in the said zone. The situation of Azerbaijan in the “Silk Road” route resulted in the formation and the development of the industry in Azerbaijan and caused the establishment and reinforcement of commercial ties with other countries. The breeding and selection science has also had a significant role

in the development of sericulture and the realization of new records and achievements in the industry. Textile products including silk are one among the goods highly demanded by people in their day-to-day life. Taking into account the role of sericulture in the socio-economic life of people in the Azerbaijan economic zone in the USSR era and the fact that it has been the only large-scale sericulture industry point in the territory of the USSR, the first and the only silk production plant was established in this zone in Transcaucasia, which was the third one throughout the USSR territory from production capacity point of view; its products had been distinctive both for their quality and diversity. The institutions exported their products to all republics of the USSR and gained remarkable fame for their outstanding quality. The sericulture industry of Azerbaijan experienced a new boom in the 60s-70s years during which the annual wet cocoon production reached 7800 tons. The cocoon is a lightweight and the most expensive raw material in the textile industry and could only be produced in zones with favorable climatic conditions for production. The plants for processing cocoons and production of silk textile products are also selected for their climatic conditions (Saidov, 2012). Azerbaijan is a country with favorable conditions for sericulture and silk industry and the most suitable zone in the country for silkworm breeding and cocoon production is the northwest zone of the country. Such an expensive and effort-demanding industry should be employed for welfare and improvement of lifestyle in the community. The old fame of Azerbaijani silk should be regained once again, and it should take its place in global markets as deserved.

The small family and individual-based silk plants and processing facilities were being worked in Azerbaijan economic zone in the past with limited production capacity. The fame of such valuable products gradually reached foreign countries which caused higher demands from the marketplace. The sericulture in Azerbaijan economic zone experienced its utmost boom and hit the peak development in XVIII-XIX. The silk produced in the zone was mainly exported to Russia and then re-exported to European states. The silk produced in Shaki had its unique place due to its quality and had been the most expensive one. Taking this into account the first silk plant was established in Nukha (Shaki) in 1829 and started to produce silk in 1830.

The plant's production capacity was 555.2 tons by 1861 (Alizada, 2007). During 1913-1914 one million and five hundred people were directly engaging in the silkworm breeding industry in the Transcaucasia region out of which one million were living in the territory of Azerbaijan.

At that period, Azerbaijan started to export its products to Italy, Russia, and some other countries in the world. The businessmen for the time being started to invest in the industry and imported and installed silk processing equipment with high production capacity; they prepared new staff to deal with the industry and became courageous in buying the new products. As a result, thousands of people were employed in the industry in both urban and rural zones, the unemployment problem was eliminated, and the state economy boomed. Such a tradition continued during the USSR era and the largest silk plant in the Transcaucasia was established in Shaki. Taking into account the exceptional role of the sericulture industry in the development of the socio-economic and cultural life of the people in the Shaki-Zaqatala economic zone of Azerbaijan, the construction of the silk plant was started in 1926 which was the third one throughout the USSR for its production capacity which put into operation in 1931 under the name of "Shaki Silk Institute". The Institute exported its products with unique quality and diversity to all republics of the USSR.

The plant continued the ever-increasing trend and its production capacity reached 240 tons of raw silk, 18.0 million square meters of fabric, 70.0 tons of silk yarn, 45.0 million square meters of ready fabric and the number of its workers increased to 7500. The industry created a job for thousands of rural residents dealing in silkworm breeding and cocoon production. This life both in rural and urban zones due to the creation of extensive employment opportunities improved highly. The development of the sericulture industry caused a halt in unemployment in the zone and created a job for thousands of people living in this zone.

Just like any other industry, the most advanced technologies are successfully employed in the developed countries of the world in the sericulture industry which are favorable from the point of view of the economy (Detailed Glossary of Sericulture, 2013). The production of qualitative silk conforming to international standards is an issue of high importance. The governmental agencies pay

8.0 AZN for each kg of wet cocoon. The program has established a real ground for the development of sericulture in the country. To use in silkworm feed, the plantation of selected varieties of white mulberry trees has previously been started in favorable lands in Shaki-Zaqatala economic zone to provide feed for the ever-increasing silkworm breeding industry. The plants for high-quality silkworm eggs production should be established to provide the farmers with qualitative eggs parallel to the employment of the most advanced machinery and equipment which altogether with result in a boom of the industry and production of silks of higher quality.

The Republic of Azerbaijan will be able to achieve the annual production capacity of 5,000 MT of high-quality wet cocoon a year within a short 3-year period if all the above-mentioned issues are addressed properly through optimal solutions. Silkworm breeding is quite different from any other field of agriculture in terms of the production period; here the farmer completes the production chain within a short period of time and can supply the products to the market and earn money within a short time. The silkworm breeding and cocoon production is a field of agricultural profession, but the cocoon processing and silk production is an industrial process that needs the completion of several stages (killing the silkworm pupa, unwinding cocoon and production of raw silk and reeling to produce silk yarns, threading the yards, production of silk fabric, etc.). Consequently, in addition to the role of qualitative silkworm eggs, good feeding of the silkworm with white mulberry leaves, the silkworm breeding conditions, the degree of professionalism of silkworm breeders, and seasonal climatic conditions there are also other factors effective in the production of qualitative silk including the application of modern technology which altogether complete the chain of production of qualitative silk (Abbasov, 2009). Taking into account the above-mentioned factors, the suitable zone, i.e. Northwest zone of the country, was selected for the first state silkworm breeding and silk production industry. This will be the cornerstone for the production of qualitative silk production whereby we can lay down the proper ground that enables us to move to the next stage.

The next stage of the industry is the production of qualitative silk in conformity to the requirements laid down in the most recent international

standards. In line with this stage, the majority of cocoon unwinding equipment currently installed in the silk workshops and plats should be replaced automated modern and advanced unwinding equipment should be imported, installed, and put into operation together with the mechanical ones. The works to be undertaken in the second stage should be aligned with the works undertaken for the first stage to continuously process the produced cocoon throughout the year and lay down the ground for the development of the industry in the future.

Based on Decree No. 2893, issued by the President of the Republic of Azerbaijan “on Promotion of Technology and Equipment of Sericulture in the Republic of Azerbaijan, issued on May 19th, 2017 and Decree No. 3286, issued by the President of the Republic of Azerbaijan regarding “State Program for Development of Silkworm Breeding and Sericulture in Azerbaijan” on October 6th, 2017, the required funds have been allocated to the establishment of the pedigree silkworm in Gakh, development of additional silkworm breeding sites and their equipment with modern equipment, and supply of breed mulberry seedlings as well as to pay as a gift to the people dealing with silkworm breeding.

The allocation of 5 AZN as subsidies for the production of each kg cocoon to the silkworm producers encouraged the farmers to shift to sericulture. The measures taken for the encouragement of farmers to sericulture have indeed been evaluated as important socioeconomic steps which will have a significant role in the increase of sericulture production, export of high-quality silk, creation of new jobs, and provision of rural people with the job which if fact.

From this point of view, we believe that the implementation of government programs dedicated to sericulture development will result in the sericulture and silkworm breeding boom and the auxiliary industries.

The high demand for silk in the global market resulted in an ever-increasing trend in the price of this merchandise. Presently the price of one MT of raw silk equals 20 MT of cotton wool and this resulted in a continuous increase in raw silk production. Although silk accounts for 0.2 percent of the global textile market share, silkworm breeding and sericulture have been developed in more than 30

countries throughout the world. Our country is capable to produce 8000 MT qualitative wet cocoon (equating to 2960 dry cocoon) and by using such a qualitative raw material in the silk industry, we'll achieve the following results:

Based on the base price paid to each kg of a cocoon, 8 AZN, we can produce qualitative raw silk worth for 8.8 million AZN as well as use 540 MT in the second phase to produce medium-quality silk amounting to 640,000 AZN. In addition, the 200 MT cocoon not unwound in the first stage and an additional 200 MT suitable for unwinding will be effectively used in the processing which in turn will result in the creation of new jobs and capable to return 500,000 AZN additional income. In general, because of the implementation of the second phase of the sericulture development plan in the country, we annually will gain 9-10 million AZN additional income and the conditions will be prepared for the employment of 4500-5000 people.

The third stage of the sericulture development plan includes the production of reeled silk from raw silk, threaded yarn, production of silk fabrics, processing the silk fabrics, dyeing silk fabrics, their screen and press printing, and preparation of qualitative silk fabrics in different designs. If 450 MT qualitative raw silk produced by cocoon unwinding equipment is totally allocated to the production of natural silk fabric of high quality, 3.5-4.0 million square meter fabrics will be produced. The remaining 160 MT silk of medium quality could be used for the production of silk kerchiefs, yard for sewing, and production of silk carpets. Consequently, around 2500-300 people will be employed in this stage in the production of silk kerchiefs, silk yarn and silk carpets.

In the fourth and last stages of the sericulture development plan, we can produce silk carpets from threaded yarns and create jobs for 800 to 1000 people and produce a lot of valuable products.

The breeding of more productive breeds of silkworm will play a paramount role in the sericulture industry in our country. Just like any other sector dealing with the production of goods for supply to the market, the free market prevailing in our country's economy puts forward its requirements for the sericulture sector. Presently, sericulture is applying advanced and more economic methodology and processes in many countries using the most advanced technologies and achievements. In

line with such a trend, about 60 kg of silkworm eggs were imported and distributed between the farmers which include 2070 boxes of silkworm eggs. 2 or 3 workers are required to breed a box of silkworm eggs up to cocoon production. As a result, 4000-6000 people will be employed for breeding 2070 boxes of silkworm eggs. The created jobs will even be more in the coming years due to an increase in the number of distributed egg boxes. The creation of such productive jobs will halt the unemployment problem in the country, especially in the northwest region. In this way, if the people engage in the sericulture field permanently, new jobs will be created, the unemployment problem will be resolved and their welfare and financial situation will be promoted consequently will not seek any job abroad and avoid the problems they normally face in the foreign countries. 370 kg of silkworm seeds were imported to our republic and distributed to the population in 2017. This means 12760 boxes of silkworms. To feed 12760 boxes of silkworms, to get the cocoon harvest – and this is to provide employment of 25520-38280 workforce. In such cases the population will provide with jobs in rural and urban areas of Azerbaijan, the unemployment rate and the welfare of the population will improve day by day. As a result of these works, it was laying up 244 tons of cocoon in 2017 in our republic.

We suggest that the proper solutions should be found for the following issues all bearing scientific and paramount importance. Addressing these problems through proper solutions will play a drastic and significant role in the elimination of the unemployment problem in rural districts of the Republic of Azerbaijan.

The development of sericulture and silkworm breeding in Azerbaijan especially in the Shaki-Zagatala economic zone can play an important role in the elimination of the unemployment problem in this zone. The development of this sector will resolve the unemployment problem in the region, provide the residents with jobs and will result in the promotion of welfare level and financial situation of the people which will significantly contribute to the solution of socio-economic problems in the zone.

The resistant and qualitative silkworm strains and hybrids bred by us have high importance from an economic point of view. The use of silkworm

breeds and hybrids prepared as a result of research conducted by the “Mulberry and Silkworm Breeding Branch” of Shaki Regional Scientific Center, affiliated with the Azerbaijan National Academy of Sciences is economically and scientifically justifiable and capable to promote the productivity level of the industry and improve the economy and socio-economic situation of the people in the zone.

## REFERENCES

- Abbasov B.H.** (2009) The theoretical and practical principles of breeding in sericulture. Ganja: 274 p.  
**Alizada Z., Ibrahimov N.** (2007) Shaki silk in long Caravan Roads. *Master Publications*, Baku: 244 p.  
**Chiraqzada V.A.** (1988) The old sericulture land. Baku: 158 p.

- Detailed Glossary of Sericulture** (2013) Baku: Apostroff, 356 p.  
**Hajiyev R.Sh.** (1966) Methods of increasing the economic incomes of sericulture. Baku: Azernashr, 41 p.  
**Qambarov A.M.** (1965) Sericulture and silk industries in Azerbaijan. Baku: Azerbaijan State Publications. 94 p.  
**Seydov A.K., Abbasov B.H.** (2012) Principles of sericulture. Baku: 164 p.  
**Taghiyev M.B., Mammadov Z.T.** (1962) The study of some issues in regard of raw material economy in Azerbaijani textile industry. *Economics Institute affiliated with USSR Azerbaijan Academy of Science*, **XII**: 62.  
**Tahirzada A.** (2005) The historical sources of Shaki. *Master Publications*, Baku: 250 p.

## İpəkçiliyin və baramaçılığın inkişafının Azərbaycan iqtisadiyyatında əhəmiyyəti və rolu

**Bəkirov Qudurət Məmməd oğlu, Şükürova Zərintac Yusif qızı, Mustafayev Aqil Gülməmməd oğlu**

*AMEA-nın Şəki Regional Elmi Mərkəzi, Şəki, Azərbaycan*

İpəkçiliyin və ipəkçiliyin inkişafının Azərbaycan iqtisadiyyatında xüsusi əhəmiyyəti və rolu vardır. Bu sahənin inkişafı Azərbaycanda və onun regionlarında işsizlik problemini həll edəcək, sakinləri kifayət qədər iş yerləri ilə təmin edəcək və əhalinin rifah səviyyəsinin və maddi vəziyyətinin yüksəldilməsi ilə nəticələ-nəcək ki, bu da sosial problemlərin həllinə mühüm töhfə verəcək. -zonada iqtisadi problemlər.

*Açar sözlər: İpəkqurdu, yemləmə, yaş barama, quru barama, xam ipək*

## Роль и значимость развития шелководства и производства коконов шелкопряда в экономике Азербайджана

**Бекиров Гудурат Мамед огулу, Шукюрова Заринтадж Юсиф кызы, Мустафаев Агиль Гюлмамед огулу**

*Шекинский региональный научный центр НАН Азербайджана, Шеки, Азербайджан*

Развитие шелководства и коконоводства в Азербайджане приобретает особое значение в экономике республики. Расширение этой сферы в регионах Азербайджана приведет к устранению безработицы, обеспечит занятость населения, улучшит материальное благосостояние и, таким образом, сыграет важную роль в решении социально-экономических проблем.

*Ключевые слова: Червь тутового шелкопряда, кормление, сырой кокон, сухой кокон, шелк сырец*