

THE FACTORS AFFECT TO DECREASE OF FODDER BASE OF SERICULTURE AND THE WAYS OF DEVELOPMENT IT

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ABSTRACT: Mulberry is a plant that is grown for silkworm rearing. It is the exclusive food for the silkworm, which during its larval life is reared for silk production. Production of mulberry leaves in the regions is essential for organizing sericulture on sound economic lines. Besides, as a result of successful production of mulberry, it is necessary to expand constantly mulberry tree and mulberry plantations in the country. In addition, skilled labour needs in mulberry growing and silkworm rearing for high production. The article stated that essential problems and prospects of fodder base of the sericulture in Namangan region. Analyzed the current condition mulberry fodder of the Republic of Uzbekistan and the further activities of development it. Given recommendations for increasing of the fodder base in sericulture in Namangan region.

Key words: sericulture, mulberry leaves, mulberry plantations, to increase and strengthen fodder base, the selection of mulberry tree and silkworm, farmer responsibilities.

Introduction.

The art of silk production is called sericulture that comprises cultivation of mulberry, silkworm rearing and post cocoon activities leading to production of silk yarn. Sericulture provides gainful employment, economic development and improvement in the quality of life to the people in rural area [1].

According to FAO's statistics, there are more than sixty countries harvest silkworm cocoons in the world. Most of them being developing countries. Nowadays, these developing nations like China, India, Uzbekistan, Brazil, Thailand, Vietnam, Indonesia, Egypt, Iran, Sri Lanka, Philippines, Bangladesh, Nepal, Turkey and some of the African and Latin American countries. In fact, around the world grow cocoons and produce an average of 640,000 tonnes of cocoons annually. Among the countries, producing cocoons are China, India, Uzbekistan, Japan and Korea, which produce 92% of the world's cocoons. Uzbekistan takes the third place in terms of harvesting volumes after China and India [2].

Currently, agriculture is one of the essential sectors of the economy of Uzbekistan. Favorable climatic conditions of Uzbekistan, which has hardworking people, as well as a carefully thought-out state strategy in this direction to contribute to the dynamic development of the agricultural sector. Therefore, sericulture is the oldest branches of agriculture, it has deep historical roots and centuries -old established traditions in Uzbekistan. Sericulture gives textile raw materials - silk yarn that is highly valued due to its special qualities [3]. When Uzbekistan had become the independence, silk industry carried out structural reforms that aimed further deepening economic reforms in this the field. Therefore, creating favorable conditions for attracting foreign investment in this industry, to modernize and create new fabrics, increase the volume and expand the range of finished products that are competitive in the world the market.

Literature Review. Sericulture is labour intensive industry. For instance, at present, about 1 million workers are employed in the silk sector in China. Silk industry provides employment to 7.9 million people in India, and 20,000 weaving families in Thailand. In

Uzbekistan, about 18, 000 permanent workers are employed in the silk factories as well as seasonal jobs increases by 640,000 people in this sector [4].

Sericulture can help keeping the rural population employed and to prevent migration to big cities and securing remunerative employment; it requires small investments while providing raw material for textile industries.

We are going to discuss and analyze problems and prospects of fodder base of the sericulture in Namangan region. As we know that the mulberry foliage is the only food for the silkworm and is grown under varied climatic conditions. Mulberry foliage is a major economic component in sericulture since the quality and quantity of foliage produced per unit area have a direct bearing on cocoon harvest. It requires constantly strengthening of the fodder base in order to a further development of silkworm breeding in Uzbekistan.

There are many Uzbek scientist and their works related to a developing of the sericulture, mulberry foliage and silk processing enterprises. These scientists such as Mahmudov O. "Economics of Sericulture" (1991), Abdullayev U. "History of Mulberry" (1991), Axmedov. N., Muradov S. "Basics of the Silk" (1998), Axmedov N. "Preparation and preliminary processing of cocoons" (2006), Axmedov N., Xibbimov M "Mulberry" (2012), Axmedov N, Yakubov A, Daniyarov U. " Selection of silkworm" (2014), Bekkamov Ch. "Silk and mulberry" (2018).

In addition, we should mention several economic scientists who had done dissertations on this sphere. Artikova S. "Organizing and increasing to efficiency of regional complex silk APK in Uzbekistan in condition of the transition to market relations (1991), Israilov R. "Increasing to material interest of the workers in the sericulture" (1991), Muhamediyeva D. "Forecasting development of the production and conversions to product in the sericulture", Uroqov Sh. "Determining the development prospects of the silk industry in the conditions of market economy" (2005), Ostonoqulova G. "Marketing strategy of development of the silk industry" (2010), Majidov Sh. "Increasing the efficiency of investment activity in the silk industry" (2010) and Saidahmedov O. "Improvement of the economic mechanism of development of the agricultural sector" and etc.

Their scientific works served to contribute to the development of the sericulture, to increase productivity of silk raw and silk fabrics, to expand export potential in a world market as well as helped to strengthen mulberry foliage in the Republic of Uzbekistan.

Research methodology. The article is used the resolution of the President of the Republic of Uzbekistan. Analyzed scientific works of Uzbek scientists. Used the world static's (FAO, ISC), as well as Association of "Uzbekipaksanoat" and the Department of "Namangan Agropilla" materials. Therefore, covered theoretical knowledge of the sericulture and silk industry, mulberry foliage and its features. Compared economic and statistical materials.

Analyses and Results. Current state of fodder base of sericulture in the Republic of Uzbekistan. Apart from producing silk, sericulture industry provide silkworms with high-quality local croutons, increasing the production of silkworm cocoons, expanding the silkworm's fodder base and providing silk-processing enterprises with high-quality raw materials. These organizational processes are the most important steps to manufacture silk products [5].

Nowadays, Uzbekistan should pay attention to plant systematically mulberry seedling and to create of new plantation in this sector. For instance, in 2017, there were 54.0 million mulberry trees, and the total area of mulberry plantations were 43.5 thousand ha. in the country. In the autumn period of 2017, 30 million seedlings were planted in the regions of the republic. In addition, 13.3 million mulberry bushes that suitable for the climatic conditions of

our republic were brought from China. In 2019, it is going to plant more than 75 million of linear mulberry trees and 57,3 thousand ha. of mulberry plantations [6]. (see fig-1.)

Besides, about 600 hectares of land were allocated to cultivation of seeds of mulberry and nursery. Mulberry farms were created. This will help to satisfy demand of Uzbekistan for mulberry seedlings.

According to the resolution of the President Shavkat Mirziyoyev “On additional measures of supporting accelerated development of the silk industry in the republic” of December 4, 2018, modern innovative technologies will be introduced into the production and processing of silk mulberry cocoons, foreign direct investment will be attracted to increase the production and export of silk products [7].

In the next three years, this production will be massively cultivated in remote areas of the country. By 2021, it is planned to deliver 40 million mulberry trees to 200 thousand families wishing to be engaged in sericulture, as well as 10 million chickens to families already harvesting cocoons.

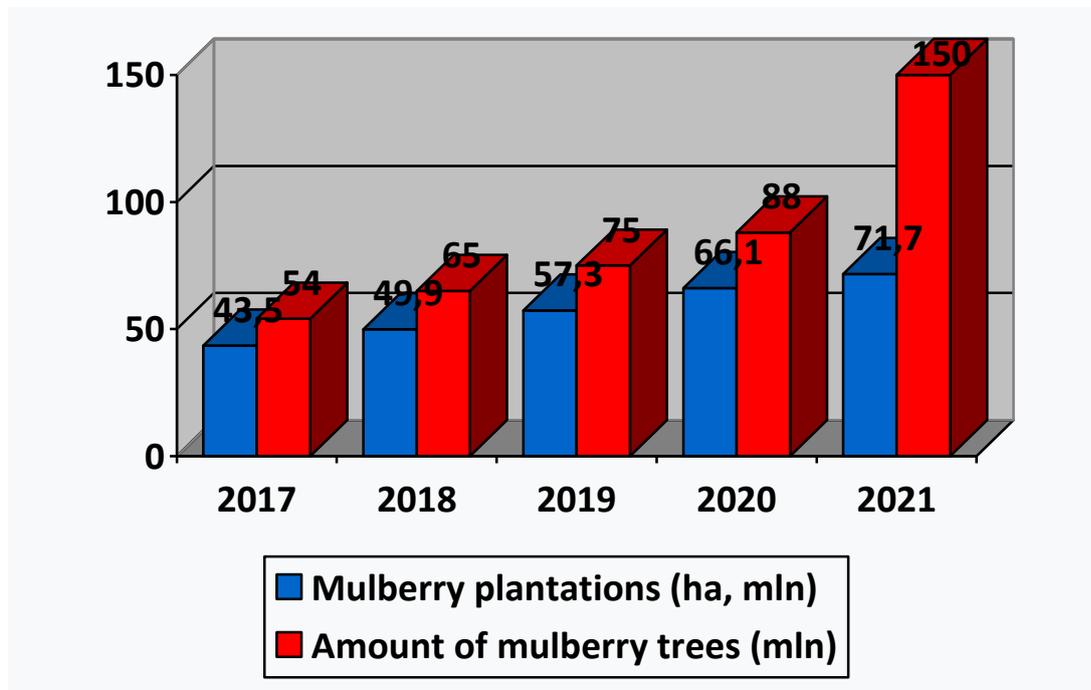


Figure- 1. Actual strategy for the further development of the fodder base of silk industry in Uzbekistan

In accordance with priority tasks of Association “Uzbekipaksanoat” increases the amount of mulberry trees along the roads and fields from 65 million in 2018 up to 150 million in 2021. In addition, organization of mulberry trees plantations in 2017-2021 (thousand hectares) in the regions. In the future, 2 thousand 200 innovative premises will be built for breeding silkworm caterpillars. Special intensive mulberry groves will be created next to them. Now the local varieties of mulberry produce 4-7 tons of fodder per hectare, and up to 20 tons of leaves can be harvested from innovative groves.

We mentioned above that the mulberry groves occupy more than 43,5 thousand hectares of land in our republic. This year, the sericulture harvested four times and this requires an increase in the forage base for silkworm caterpillars. As a result, of measures taken over the past two years, the crop was brought up to 19 thousand tons in the country.

However, there are a number of problems in fodder base of the sericulture of the country:

- six thousand hectares of mulberry plantations degraded;
- productivity on 37 thousand hectares does not reach even 30 percent;
- highly nutritious varieties make up only 5-6 percent of mulberries
- moreover, the fight against diseases and pests is not carried out in a timely manner and efficiently, as a result, the food supply is lost;
- eighty percent of mulberry silkworm is imported.

Based on this, Uzbekistan is planned to create 20 thousand hectares of new mulberries and renew 10 thousand hectares of old mulberries by the end of 2022. To do this, in existing mulberry plantations, the population will be provided with land of 1-3 hectares on the basis of a family contract. Silk-growing clusters will distribute mulberry seedlings for updating mulberries, as well as silkworm eggs. Along with the proceeds from cocoon harvesting, the population will have at their disposal a harvest from additional crops grown between the rows of mulberries. The Ministry of Agriculture, Uzbekpakanoat Association were instructed to allocate land for new mulberry plantations, update old plantations, and introduce water-saving technologies. The task was set to bring cocoon harvesting volumes to 21 thousand tons next year and up to 30 thousand tons in 2025.

It was also instructed to establish the procurement of “super elite” and “elite” varieties of silkworm eggs in Uzbekistan, to provide support for the drainage stations, take measures for the chemical and biological protection of mulberries, and create new jobs.

Problems and prospects fodder base of sericulture in Namangan region. Today, silk industry that plays an important role in the development of the Namangan region. Namangan region has great potential for the production of silk raw and silk fabrics. Namangan is one of the regions of Uzbekistan, located in the southern part of the Fergana Valley in far eastern part of the country. Namangan region is known for light industry and other branches of productions.

As said above, silkworm is one of the most important agricultural sectors; the main nutrient source for the silkworm is the foliage of the mulberry tree. However, recently years, there have been many problems in the sericulture of Namangan region, such as low volume of silk products, a decrease of export potential, production of silkworm eggs as well as insufficient supply of mulberry foliage.

The main indicators play an important role in determining economic efficiency of production in the silk industry. The table-1 is presented main indicators of the silk industry in Namangan region [8]. (see. table-1)

The table-1. Main indicators of the silk industry in Namangan region

Indicators	Measure	2015	2016	2017	2018	2019
	Fodder base (mulberry)	mln. trees	7725,2	6077,7	5897,7	2741,6
mln. (ha)		3048,2	3048,3	2804,1	2086,7	2337,5
Volume living cocoon production	tons	2 811,7	2 827,2	601,8	1 498,5	1636,6
Volume dryng	tons	937,2	942,4	188,3	499,9	545,5

cocoon production						
Raw silk	tons	90	90,5	157,8	165,2	174,1
Silk fabrics	mln.sq.m	0,3	0,5	0,5	0,6	0,7

Source: The table is prepared on the basic of the Department of “Namangan Agropilla” materials.

In the table.1 is shown that recently years, the fodder base of the sericulture in Namangan region has decreased. In 2015, the amount of mulberry trees were 7725,2 mln. in addition, 3048,2 hectares of mulberry plantations. The following year, food supply continued falling down. In 2019, the volume of the mulberry trees got to 3723,3 mln. as well as mulberry plantation 2337,5 of mln.ha. The fodder base of the sericulture decrease by 48 % compared to 2015.

The production of living cocoons consist 2811,8 of tons in 2015. It reduced by 2017. In 2017, farm’s workers produced 601,8 tons of valuable materials that they will have to look after 31,000 boxes of silkworms. The living cocoons reached to 1498,5 thousand tons in the following year. We can see that during 2015-2019, the volume of drying cocoon production in the branch consisted by average of 622,1 tons.

It is well known that in the past, the term of silkworm breeding was one month, which lasts between May-June. For instance, in 2015, the cocoon season was only 1 time until 2017. However, the yield of cocoons made twice and thrice times in the country. The current 2019. It cultivated cocoons four times a year in this region.

Nowadays, the main attention is also paid to the fodder base of Namangan region. It will be planned to create intensive mulberry plantations per 100 hectares using Chinese technology. The production of silk enterprises such as Fabric Tex, Verigrow Ipagi, Golden Silk, Marjon tola and others will finance and provide the necessary material and technical resources to create new mulberry plantations.

Therefore, local farmers carry out agro-technical measures to ensure the preservation of mulberry trees on the edge of the wide fields as soon as possible, and short-term reconstruction of old mulberry trees.

Hence, if we analyze the nutritional status of Namangan region by districts, we can see that compared 2019 to 2015, the number of mulberry plantations declined. Therefore, it also indicates that mulberry area has declined over the past five years [8]. (see.table-2)

The analysis shows that fodder base of sericulture reduced on food supply for several reasons. They are:

- mulberry trees, which planted in large quantities of the areas in Namangan region, are still young. These mulberries have not yet been harvested;
- agro-technical activities of mulberry trees and mulberry plantations were not implemented in the areas;
- using of mulberry trees and plantations for other aims (to create new garden or another purpose);
- a lot of mulberry trees being cut down by the population in Namangan region;
- large quantities of mulberry trees stopped harvest producing crops;
- reducing of the productivity mulberry plantation in the areas;
- the amount of mulberry plantations and single mulberry trees, in fact, they consist of 65-70% and they are not controlled by farmers.

As we know, there is no doubt in a rich and powerful country demand for development of silk industry. Year after year, agriculture sector, particularly, silk industry in Uzbekistan changes not only numbers but also introduce new reforms for the branch. Thus,

President Shavkat Mirziyayev pay an attention to increase silk products and signed a resolution to create Association of “Uzbekipaksanoat”. In accordance of tasks of the Association “Uzbekipaksanoat” and the Cabinet of Ministers dated August 11, 2017 "On the Program of measures for complex development of the silk industry in 2017-2021" [9]. Namangan region are being taken necessary tasks to develop the silk industry.

In particular, the inventory of mulberry trees and mulberry plantations was conducted in Namangan region in 2017. In order to increase fodder base of sericulture, Namangan region is planned 1 million 297 thousand mulberry trees, and created 816 ha. of mulberry plantations.

For instance, over past two years, 1 million 246,400 of mulberry trees were planted in the region. Moreover, 125.7 hectares of land were allocated to create of new mulberry plantations. As a result, 68.4 hectares of mulberry plantations were created that including of 10.9 hectares in Mingbulaq district, 10.0 hectares in Namangan district, 27.0 hectares in Narin district, 10.0 hectares in Uychi district, 10.5 hectares in Uchqurgan district, 6.0 hectares in Turaqurgan district.

Table-2. The dynamics of mulberry trees and mulberry plantation in Namangan region (by the districts)

№	Districts	2015		2016		2017		2018		2019	
		Mulberry plantation, ha	Mulberry trees, thousand								
1	Mingbulaq	163,9	548,8	163,0	443,2	163,9	463,2	161,5	105,1	191,0	109,5
2	Kosonsoy	277,4	388,7	277,4	319,9	262,4	356,4	169,2	150,5	163,6	103,9
3	Namangan	111,0	991,2	111,0	793,0	111,0	793,0	102,4	316,8	486,6	277,8
4	Narin	189,0	438,1	189,0	250,2	171,0	241,6	169,4	240,0	455,3	238,9
5	Pop	227,3	680,7	227,3	529,9	126,3	360,0	138,4	250,0	313,3	246,8
6	Turaqurgan	337,1	630,2	283,1	537,9	284,0	480,7	230,0	320,0	417,6	320,7
7	Uychi	285,0	705,0	285,0	522,5	231,2	517,5	247,9	188,6	188,1	96,7
8	Uchqurgan	158,9	679,1	158,9	512,0	158,9	553,8	135,8	114,6	295,8	153,2
9	Chartoq	317,4	627,2	342,4	511,9	317,4	506,3	179,0	355,0	356,8	236,5
10	Chust	448,2	1175,9	458,2	976,0	448,0	976,0	218,1	510,0	575,1	471,4
11	Yangiqlangan	533,0	678,0	553,0	498,9	530,0	499,9	335,0	191,0	280,1	185,6
Total in Namangan region		3048,2	7725,2	3048,3	6077,7	2804,1	5897,7	2086,7	2741,6	2337,8	3723,3

Source: The table is prepared on the basis of the Department of “Namangan Agropilla” materials in Namangan region.

The capacity area of 5,0 hectares of intensive mulberry plantations have been established on the basis of new technologies in Pop district. In addition, it is planned to create a silkworm complex in Chartaq district based on Chinese technology. About 150,000 mulberry seeds were imported from China to create new intensive plantation on the area of 100.0 hectares.

Discussion. Silk is the most elegant textile in the world with unparalleled grandeur, natural sheen, and inherent affinity for dyes, high absorbance, light weight, soft touch and high durability and known as the “Queen of Textiles” the world over. On the other hand, it stands for livelihood opportunity for millions owing to high employment oriented, low capital intensive and remunerative nature of its [production, the very nature of this industry with its rural based on-farm and off-farm activities and enormous employment generation potential has attracted the most appropriate avenues for socio-economic development of a largely agrarian economy like Uzbekistan. Sericulture provides much needed employment, income and foreign exchange in developing and labour rich countries especially Uzbekistan.

Nowadays, cluster economy is attracting the most attention around the world. A new kind of industrial consortia on the hand of both business and government. Clusters represent a new way of thinking about national, state, and local economies, and they necessitate new roles for companies, for various levels of government, and for other institutions in enhancing competitiveness [12]. For companies, thinking about competition and strategy has been dominated by what goes on inside the organization.

Clusters suggest that a good deal of competitive advantage lies outside companies and even outside their industries, residing instead in the locations at which their business units are based. This creates important new agendas for management that rarely are recognized [13]. For example, clusters represent a new unit of competitive analysis along with the firm and industry.

The theory and the methodology of cluster method has been widely studied by many economists and experts. In particular, A.Marshall conducted a series of researches in this direction, his idea was made possible in various business organizations of the British industrial zones. L.G.Metson studied the link within the clusters, analyzed the degree of cluster development, and analyzed the competitiveness of the state or region. M. Porter paid attention to the fact that the cluster industries are interconnected, and they have studied their coordination. Among foreign scholars, P.Fisher, A.Cornett, Ya.Hansen, Ya. Edvard, Dj. Danning and J. Liotard also contributed to the development of regional clusters. A number of prominent foreign economists such as I.Altukhov, I.B Buzdalov, M.Bakket, V.M.Bautin, L.D.Devyatkina, N.Popov, I.G.Ushachev and others contributed significantly.

Today, in our country is carried out transition on cluster system on agricultural branches. On the agriculture sectors of our country is carried out transition on cluster system. The government pay attention to step by step to proceed on cluster method on silk branches and the organizations of manufacture. The President of the Republic of Uzbekistan Sh.Mirziyoev adopted on June 31, 2019, resolution №. PP-4441 “The further development of sericulture and deep processing of production” [11] was issued. Further deepening of the silk industry reforms, creating favorable conditions for the accelerated development and diversification of the sector, the widespread introduction of cluster method of production, increasing the volume of investments in deep processing of cocoons and the creation of high value added finished products.

In the market economy, the introduction of new methods to manage the development of the silk industry and its processing. The cluster system, is a key factor in the economic growth of the sericulture. Consequently, due to the resolution №. PP-4441, there are several

silk enterprises in Namangan region. Organizational functions of these enterprises are managed on cluster system. All these enterprises have their mulberry plantation which using for production cocoon silkworm. Hence, we suppose that in connection with the situation expansion and improvement of fodder base conditions, such as replacement of low - productive mulberry varieties and hybrids by more productive ones, replacement less productive linear plantings by highly productive mulberry plantations and realization of their protection from the agricultural pests and illegal cutting in Namangan region,

Conclusion. As we mention above, mulberry is a plant that is grown for silkworm rearing. It is the exclusive food for the silkworm, which during its larval life is reared for silk production. Mulberry forms the basic food material for silkworms. Production of mulberry leaves on scientific lines is essential for organizing sericulture on sound economic lines. It is estimated that one metric ton of mulberry leaves is necessary for the rearing of silkworms emerging out of one case of eggs which will yield about 25 kg to 30 kg of cocoons of high quality. Therefore, mulberry is a kind of economic species with strong environmental adaptation, whose fruit, leaf, twig and hull all can be used. Mulberry twig can be processed into sheet metal, fabric and paper, and can cultivate mushroom. Mulberry leaf can not only feed silkworms, but also be made into tea, as well as feed livestock.

In our opinion, insufficient fodder base in the region has a negative impact on the quantity and quality of silkworms fed. In order to develop of fodder base of silk industry of Namangan region, in our opinion, the following tasks need to be done:

- to expand the main fodder source for silkworms in the region through expansion of mulberry plantations, and not mulberry trees;
- to increase the yield of one ha. of mulberry to improve the nutritional status of the districts
- to implement agro-technical measures in the districts which has existing mulberry trees and mulberry plantations to achieve high productivity of mulberry leaves;
- to increase of high-yielding varieties of mulberry seeds in the regions;
- to develop cluster method on the silk processing enterprises and to create new mulberry plantations under organization of enterprises.

Modern findings show that mulberry leaves carry pharmacological actions that can benefit diabetic patients, as the leaves contain natural substances that can help reduce swelling, lose weight, lower blood pressures, bring down blood glucose levels and improve blood lipids. The most important part of the mulberry tree in the economic sense leaves and it is the only food of silkworm. There are nutrient substances (such as sugar, protein, fat, water, enzymes and various vitamins) exist on mulberry leaf that needs of silkworm [10]. As long as silkworm alive, it eats mulberry foliage. Consequently, the more abundant the mulberry leaf, the greater the distribution of silkworms and the more cocoons will be cultivated.

Today, Uzbekistan became independence in the silk industry, large-scale structural transformations were carried out aimed on the further deepening economic reforms, creating favorable conditions for attracting foreign investment, creating new and modernizing existing industries, increasing the volume and expanding the assortment of manufactured products that are in demand and competitive in the world market. At the same time, Uzbekistan needs constantly the further development of the industry is hindered by insufficient fodder supply and cocoon raw materials.

In addition this, the government should carry out the prospects to strengthen and improve cocoon fodder base in the sericulture, including, expansion of mulberry plantations in the regions of the country, mulberry trees planting, and implementing agro-technical measures for increasing productivity of mulberry leaves.

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