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To Improve the Quality of Cocoon Which Was Made In Different Season and Ways by Using Innovative Ideas and Technologies

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ABSTRACT: In this article, the normal development of *Bombyx mori*, leaf-feeding activity of silkworms, their dependence on digestion and age-feeding conditions of the worm were studied, indicators of silkworm breeding technology for young people - temperature, humidity, nutrient content and sleep time were determined. The geometric dimensions and properties of cocoons grown in the autumn were studied According to the results, when the recommended measures are followed there is a possibility of getting a rich and high quality cocoon crop.

KEYWORDS: Worm, silk, leaf, feeding, cocoon, quality, season, silkworm

I.INTRODUCTION

Uzbekistan is one of the world's leading cocoon producers. Our country is the 5th largest producer of silk after China, Japan, India and Brazil. In 2000, 18.9 thousand tons of cocoons in the country, 1,200.3 tons of silk fabric and 95 tons of silk yarn at the silk industry were produced, and 5.336 million m² of silk fabrics were manufactured.[1]

However, the quality of the cocoons does not fully meet the potential of the silk industry to produce goods at the level of domestic and foreign markets and become a source of currency.

One of the main reasons for this is the fact that the industrial method is not used in the production of silk, especially when insufficient attention is paid to mulberry leaf care which affects the quality of cocoons.

As a result of inexperience of the population and mistakes in the maintenance of silkworms, unfortunately it is possible to take up to 40-45 kg from a box now. Improving the quality of the cocoon, maximizing the yield of cocoon from each box, requires a number of agro-technical and organizational measures. In the hybrid silkworm breeding indicate, an average of 60 kg of cocoons from per box can be obtained. Distribution of silkworms and timely delivery to silkworm breeders is one of the responsible processes of silkworm breeding. If the revived worms are not immediately handed over to breeders and started feeding, 5,000 to 7,000 worms can die per day. Worms at the first and second age are given leaves 8-10 times every two hours. The special place for worms should be expanded while time is running. The temperature and humidity are very important for worm care. The normal growth of the silkworms depends on its eating leaf activity, their digestion, turning the age and the temperature of their home. When silkworms are at an early age, the temperature should be around 26-27°C and relative humidity is 65-75%. In addition, in every 2 to 3 hours, the ventilation of the premises for 15-20 minutes prevents the worms from gaining various diseases. When the worms reach the fifth age, the leaves which are cut by a branch of 70-100 cm long are given. At the age of 4 and 5, leaves are inserted 6 times a day, every 3 hours. During this period, the temperature is expected to be between 24-25 ° C and relative humidity is 60-65%. Decrease in temperature can slow digestion and metabolism in the worm's body, which in turn causes the elongation of the worm period and the exceeding the number of small cocoons. In order for the worms to grow, develop and free themselves from various diseases, the worms must have place which is a level of 20-25 m² at the age of 5 and 65-70 m² at the age of 5 [2].

At the fourth and fifth age, the stems will be replaced the next day for the first time after worm shedding skin. Then the stems are kept, depending on how much they are accumulating. Leaf-fed worms stop feeding at the 8-9 days of the age of five and start looking for a suitable place to wipe their body from waste. At this time worm breeders should lay the first stalks and give the leaves to other silkworms, and leaf-fed worms will gradually begin to climb into the stalks.

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Ensuring the ambient temperature of 25–26°C and relative humidity of 60–65% during the cocoons will ensure that the future of cocoons are abundant and of good quality. It is the fodder base of mulberry silkworm for the cultivation of high-quality and high-yielding cocoons. Therefore, proper and timely agro-technical treatment of existing mulberry plantations and single-row mulches is important. According to the experts' opinion, the timely and quality implementation of silkworm agro-technical measures by breeders will ensure the high yield of the silkworm and increase the economic efficiency of the industry.

Feeding the silkworm in the spring, in the usual seasons, is called the first worm feeding, while the summer or autumn feeding is called the repeated worm feeding. Repeated worm feeding differs from the spring worms with holding the process in some unfavorable conditions, including high temperatures and low moisture content and when mulberry tree nutrient content decreases and the leaves harden, as well as disease-causing microorganisms increase.

There are great opportunities in the development of the cocoon production in our country. One of them is the production of cocoons in summer and autumn. The climatic conditions of our country allow silkworm breeding from April to November. During the summer-autumn seasons in a single row of mulberry trees and mulberries, the leaf mass accumulates even more than in spring. However, this feed dies without being used. Taking into account the above, this year the farms of mountainous and piedmont areas of the country started the repeated cultivation of cocoons.

In the Surkhandarya region, the temperature of the incubation chamber during resurrection of the larvae was 25°C. Larvae resurrected during the summer were first extracted into hydrochloric acid. Special attention was given to the relative humidity of the incubator at 75-80%. Surkhandarya region is one of the hottest areas in Uzbekistan, where it needs to increase air humidity. During worm feeding we used micro-climate feeding under the film.

The worms obtained from the incubator are placed in warm, disinfectant rooms and immediately started being fed with mulberry leaves. The silkworm passes through phases which consist of 5 ages and, if properly fed, they begin to pack cocoons within 24–26 days. As a result of research, new technologies of silkworm breeding are developed and introduced into the production of cocoons. One of such experiments is the seasonal feeding of silkworms.

Table 1
Indicators of silkworm breeding technology by age

№	Indicators	At 1 age	At 2 age	At 3 age	At 4 age	At 5 age
1	Temperature, °C	27°C	26-27°C	25°C	25°C	24°C
2	Humidity, %	85-90 %	78-80 %	75-80 %	77-79 %	75 %
3	The amount of feed, kg	2,5-3 kg	4-4,5 kg	33-35 kg	120-125 kg	550-650 kg
4	The length of sleep, hour	24 hours	24 hours	24 hours	36 hours	-----

20 to 25 minutes before giving the leaf in the morning and evening, the plastic film is open on worms after that soaked lime is sprinkled and leaf is given and then the plastic film is closed. At 1 age, a box of worm consumes 2.5-3 kg of leaves and the temperature is 27 ° C, humidity is 85-90%.

At the age of 2, the temperature of the silkworm feeding should be 26-27 ° C and the average humidity is 78-80%. At this age, a box of worm consumes about 4 to 4.5 kg of leaves. Feeding time, lime spraying and plastic film use technology are stable. After 29-30 days lime is sprinkled. The length of sleep is 24 hours. When the silkworm is sleep, the average temperature should be 26 ° C and relative humidity is 83-85%.

It is important to take into account the temperature and timing in the silkworm feeding at age 3, which is important for the quality of the cocoon. The temperature at this stage is 25 ° C and humidity is 75-80%. At this age, one box of silkworm feeds on average around 33-35 kg of leaves. Feeding time, lime spraying and film use are unchanged.

At the age of 4, the temperature is 25 ° C and humidity is 77-79%. At this age, an average of 120-125 kg of leaves is spent the silkworms in one box. Lime is only sprinkled during sleep. The temperature during sleep is 23 ° C, with relative humidity 75%.

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At the age of 5, the temperature is 24 ° C, with a relative humidity of 73-75%. During this period, the silkworms in one box consume 550-650 kg of leaves. After consumption of leaves for 7 days, from the 8th day silkworms start to cocoon. Water or 0.5% chlorine mixture are sprayed to prevent the leaves from drying out quickly. During the cocoons, 60 artificial handles are placed in one box, with lime sprinkled on the finished worms. At this time, the temperature is 25 ° C and only 75%. The cocoons will be picked up after 8 days. With this technology, the average amount of cocoon extracted from a single box is 45 kg. Seven days after the beginning of packing of cocoons, industrial cocoons will be harvested and cocoons for offspring will be harvested within 8–9 days. Then 10 to 15 cocoons are scratched or trimmed in different areas of the cocoons to make sure they become bulbs. If the worms in the cocoons that have been examined become bulbs, the cocoon is started to harvest. Some silkworm breeders begin to harvest raw cocoons in order to give weight cocoon. For that reason, the proportion of poor quality and dirty cocoons which were appeared as the result of leaking fluid from not fully formed cocoons during the process of transferring and drying to the reception centers increases[3].

If the cocoons are harvested late, the bulb inside the cocoon can become a butterfly and perforates the cocoon. Therefore, timely picking of cocoon is important. Ensuring the quality and timeliness of all the above-mentioned activities during worm feeding is certainly the most important task of the silk master-agronomist, heads and worm breeder. When this task is done properly, it will be possible to obtain a rich and high quality cocoon.

The geometric dimensions and properties of the resulting cocoon samples were studied (Table 2)

(Table 2)
Geometric dimensions and properties of the cocoon sample

Indicators	Values
Length, mm	26,4
“Qirqim” diameter, mm	13,8
“Belchanlik” coefficient	1,87
Coefficient of thinning	0,95
The shape of the cocoon	Oval
Silk productivity,%	50
Hardness, mm	0,92

The coefficients of cocoon shell geometric length, “Qirqim” diameter, and “Belchanlik” thinness coefficients are small, with silk 50% and crust hardness of 0.92 mm. This means that our silkworm breeders will produce abundant and high quality cocoons if they are properly and on time.

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