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EFFECT OF FEEDING UNDER FILM ON SILKWORM AGE TRANSITION AND SURVIVAL

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Abstract
During the spring feeding season in our republic, during the care of silkworms, if a polyethylene film is covered directly over the larvae, the humidity inside the film increases slightly (evaporation occurs) and the larvae are affected by biological indicators (3% less compared to the worms covered with the film at a height of 30-40 cm, having a negative effect on the flat growth of larvae, timely shedding, viability, length of the larval period, cocoon productivity and productivity) it was observed that it had viability and that the yield of cocoons obtained from 1 box was 8-10 kg, and the yield was 10-12% higher than that of the control variant fed in a simple way.

Keywords: Mulberry variety, special mulberry, mulberry leaf, nutritional value, feed, silkworm, breed, hybrid, experiment, option, control, worm house, cage, polythene film, larva, young, agrotechnics, worm rearing under film , temperature, humidity, oxygen, viability, psychrometer, physiological process, gas exchange, molting, cocooning, live cocoon, productivity, fecundity.

Introduction

The process of metabolism in the body of the mulberry leaf silkworm occurs during the breakdown of food received from environmental factors, and this phenomenon occurs only during the period of the worm. In this case, the mulberry leaf receives substances necessary for all stages of development of the silkworm and collects fat cells as reserve food.

Therefore, the mulberry leaf is not only a source of energy for the silkworm organism, but also regulates its healthy growth and development. The speed of development of special feeding mulberry trees, variety, age, and the result of the performed agrotechnical measures depend on the increase in the nutritional value of the cultivated mulberry leaf.

However, regardless of the breed of the silkworm and the chemical composition of the mulberry leaf, the amount of nutrients used to obtain 1 kg of live cocoons is determined to be around 12-14 kg according to the agrotechnical regulations, but the composition and nutritional value of the mulberry leaf is of great importance. is considered

This process is determined by the results of tests in a special laboratory and experiments. In general, since the mulberry leaf is one of the important factors for the silkworm to adapt to its living conditions, there is a certain difference between the physiological processes in its internal body cavity and the amount of nutrients consumed as a result of gas exchange. the change of water in the body also depends on it. From these analytical data, it is clear that mulberry silkworms love to eat wet and nutritious leaves, regardless of their age.

However, in any worm house temperature of 28-320C and decrease in humidity (up to 40-50%) will cause mulberry leaves of such a given appearance to wither quickly. As a result, the young larvae cannot digest the dehydrated mulberry leaves well and most of them are excreted as waste material. This leads to violations of agrotechnics in production and changes in the observance of agrotechnical rules in worm farms, as a result of which the feed given to silkworms is overused, wasted, and affects the biological indicators of larvae.

Based on the information explained above, we have organized our scientific research on this problematic issue according to 4 options. For this purpose, it was chosen to carry out experimental work in the method of feeding silkworms under a film according to their youth, to ensure that the leaves given to them do not quickly wither, and instead of giving leaves 9-10 times in the first year in the same day, in the usual method of feeding silkworms, it is necessary to comply with agrotechnical requirements. We arranged to give the larvae according to the calendar according to their age (at 600, 1000 in the morning, at 1400, 1800 in the afternoon and at 2200 at night). Actions based on options were as follows:

1. Option 1- Selection of the trays intended for feeding silkworms, determining the location and covering the upper part of the larvae of the 1st age with a film at a height of 5 cm.

2. Option 2. The upper part of the larvae of the second age, which are being cared for in the trays intended for feeding silkworms, was covered with a film at a height of 10 cm.
3. Option 3. The upper part of the III-year larvae, which are being cared for in the trays intended for feeding silkworms, was covered with a film at a height of 20 cm, and at a height of 30-40 cm in the case of large IV-V years.
4. Option 4- comparative. Worms were fed in the usual traditional way.

In the experiment, silkworms were fed with the leaves of mulberry varieties that are available and propagated by free pollination located in the university area. Psychrometers were hung individually in the film to measure the temperature and relative humidity that affected the silkworms of each variant kept in the experiment at fixed times of the day.

The temperature under the film and the relative humidity of the general worm feeding area of the worm house, except for the feeding area, were determined every 2.5-3 hours with an August psychrometer and recorded in a notebook of special experimental data. Analytical information on this is presented in Table 1.

Table 1 According to the conducted research, the standard indicators of temperature and relative humidity in the area where silkworms are fed under the film.

Options	Juveniles of the mulberry silkworm in the experiment									
	Age 1		Age 2		Age 3		Age 4		Age 5	
	Temperature °C	Humidity %	Temperature °C	Humidity %	Temperature °C	Humidity %	Temperature °C	Humidity %	Temperature °C	Humidity %
1	25,8	73	26,5	82	27,1	76	27,5	64	25	63
2	25,6	74	26,3	83	26,8	87	26,6	71	25	63
3	26,7	78	26,8	86	26,7	88	26,2	73	25	63
4	25,4	80	25, 2	70	26,0	92	25,4	75	25	63

From the data presented in this table, it can be seen that the temperature and humidity indicators under the film depend on how high the film is closed over the worms. Including; it was found that if the film was closed at a height of 5 cm above the larva, the temperature inside it was two degrees higher than the temperature in the room, and the relative humidity of the air was 20% higher. When monitoring the condition of the worms and the condition of the given leaves in this variant, it became clear that when the polyethylene film was covered directly over the worms, the water vapor released from the leaves and worms perspired inside the film. worms are a little annoying.

However, it is important to note that in this option, the leaves given to the worms will not fade for a long time. On the other hand, the amount of carbon dioxide gas increases to a certain extent while the oxygen in the film decreases to a certain extent. Therefore, worms cannot develop well and quickly compared to worms in other options (even if care is taken to keep the leaves in good condition). The growth of the larvae in the Cababi worm house and mainly under the film is slightly slowed down, and the shedding of the worms also leads to a more uneven variety.

Accordingly, it was found that when the worms were fed by covering the film at a height of 10 cm, the temperature under the film was 1.5 degrees higher than the room temperature, and the relative humidity of the air was 13-15% higher. When the development of worms in this version was observed, it was achieved that they fed evenly and shed their skin evenly. If we compare them with control worms fed in room conditions, it is known that the development of worms in the experimental variant is one day earlier. The worms in all experimental variants were given leaves 5 times a day during the 1-3 years of age, while the worms in the control variant were given 9-10 times a day in the 1st year, 8-9 times in the 2nd year, 7-8 times in the 3rd year, 4-8 times in the 4th year. at the age of 6-7 times and 5-6 times at the age of 5.

In the experimental version, since the humidity of the air under the film is always 79-80%, the given leaves do not wither quickly, and conditions are created for the worms to feed on it for a long time, i.e. up to 8 hours. The supply of oxygen to the worms under the film was changed at the time of leafing. The agotechnical processes of this first variant of feeding worms under the film were also observed in the 2nd experiment variant. Only in this option, the distance between the film and the worms was 20 cm. Worms from this variant have been shown to develop as well and evenly as worms from the other variant.

The temperature under the film was 1.2-1.3 degrees higher than the room temperature, and the relative humidity of the air was 12% higher than in the room. This situation, i.e., high humidity, creates conditions for the water content of the leaves given to the worms to not decrease quickly, that is, not to wither quickly, and for the worms to be fed moderately for 7-8 hours. It was observed that this situation led to the consumption of 2-3 times less of the total amount of leaves for feeding worms, as well as the reduction of gnat, the labor spent on feeding worms and preparation of leaves, i.e. the labor force, and the increase of economic efficiency due to the increase in the yield of competitive seed cocoons.

These data also apply to 3-4 options, the temperature under the film is on average 26.9-27.0 degrees, and the average humidity is 74-76%, which is 1.1-1.2 degrees higher than the temperature in the worm house, and the humidity is 10- It was found to be

11% higher. These indicators in these options were equal to the data in option 1, because in these options, the film was closed on the worms at a height of 10 cm, but in option 6, holes were placed from the bottom of the film, and in option 4, from the upper side. The results showed that there was no change in temperature and humidity inside the film with small holes placed from below or above. Analyzing the agrotechnical situation in the experimental version, it should be noted that the main reason for the flat development of larvae in the 2nd, 3rd and 4th variants is that the distance between the polythene films covered with worms and the adult worms is 30-40 cm high.

In this case, the inside of the film does not sweat and water vapor does not form, and the open space between the film and the worms is filled with oxygen, and this air is enough for the worms until the next time they give leaves, besides, the temperature inside the film keeps the worm house warm. does not overflow sharply during ventilation.

For example; during ventilation, the temperature in the worm house decreases by 1.5-20C, and the temperature under the film decreases by only 0.1-0.20C. This condition also causes the larvae to develop evenly and the amount of water in the leaf does not decrease sharply. Therefore, in order to ensure uniform growth of worms, the shedding process is the same for all worms, especially the agrotechnical conditions inside the film are moderate for worms, the interval of the film covered with fed worms is 30-40 equal to cm gave positive results in options where adult worms were fed. The closer the distance is to the worms, the more difficult the conditions inside the film will be and will lead to uneven development of the worms.

In this case, the worms of the control variant and the worms taken for the experiment were kept in the same room, only the worms of the experimental variant were kept under a film, and the control worms were kept in an open shelf. Control worms were kept under the following conditions according to their age: 1-2 and 3-year-old worms were kept at a temperature of 260C at 65% humidity, and the room was ventilated by opening the window for 15-20 minutes every 2.5 hours. In the old age, the temperature was 250C, the humidity was 60%, and the room was ventilated for 25-30 minutes.

After that, the films of the experimental variants placed over the reared silkworms at age 5 and cocooning larvae were removed and all cocooning worms continued cocooning at 250C temperature and 60-65% humidity. mature silkworms in the experimental variant spin cocoons in natural and artificial cocoons. During the cocooning period and during the cocoon picking process, larval viability was studied before live cocoons were picked in the section of variants on each shelf.

In short, we will focus on determining the number of larvae that have not started cocooning and the number of larvae that have entered the cocoon in relation to the number of 200 pieces of the survival indicators of the larvae of all options, which were maintained at the level of demand according to the agrotechnical procedure specified in the experimental methodology. . Scientifically based information on this is presented in Table 2.

Table 2 Changes in the duration of moulting and survival of larvae fed under the film during the larval period

Options	Age 1		Fasting period	Before wrapping the cocoon	
	Quantity	%	Day	Quantity	%
V-1	200	100	0.7	188	94.0
V-2	200	100	1.0	184	93.0
V-3	200	100	1.0	182	92.0
V-4	200	100	1.5	180	90.0

As can be seen from the analytical data and figures given in the next table, worms in almost all variants developed evenly.

For example; By the age of 5, the number of worms in options 2-3 was equal to or 1.0% higher than the number of worms in the control option, while the number of worms in the first option was only 1.5% less.

The viability of the worms becomes apparent before cocooning. It turned out that this indicator differs from each other by up to 3% in the experimental options. Including; shows that the viability of worms in the first variant is 4% less viable than variant 3, 2% less viable than variant 2 and control worms. Therefore, keeping worms under a film does not affect their viability negatively, but has a better performance than worms kept in open trays.

In conclusion, it should be noted that based on the agrotechnical processes and results observed in the research work, when the agrotechnology of feeding worms under the film is used in the production conditions, the worms are covered directly with a polyethylene film. use is not recommended.

If a polythene film is covered directly over the larvae during the spring feeding season of silkworms, the moisture in the film increases slightly (evaporation occurs) and the larvae are exposed to some biological indicators (3% less compared to the worms covered with the film at a height of 30-40 cm, having a negative effect on the flat growth of larvae, timely moulting, viability, duration of the larval period, cocoon yield and productivity) it was found that it had viability and the yield of cocoons obtained

from 1 box was 10-12 kg, and the yield was 18-20% higher than that of the control variant fed in a simple way.

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