EFFECT OF TEMPERATURE ON MULBERRY SILKWORM

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Annotation. Mulberry silkworm is considered to belong to the class of insects. It is known that insects are considered to be pygylotherm i.e. cold-blooded. For this reason, body temperature directly depends on the temperature of the external environment. Higher or lower temperatures than normal affect the biological and technological properties of silkworms.

Keywords. Silk, sequins, insects, temperature, enzyme, leaf, worm.

The speed of physical and chemical processes in the cells of any organism depends on temperature. For normal chemical processes in the body, for absorption of substances in the cells, there should be a sufficient temperature. Cells of different animals have different temperatures. We know animals whose body temperature is constant and does not depend on the temperature of the external environment. Such animals are called warm-blooded animals. The temperature in the body of cold-blooded animals varies depending on the temperature of the external environment. Therefore, the development and life of cold-blooded animals takes place in very unfavorable conditions. A certain level of heat is necessary for good exchange of substances in the body. Temperature is especially important for insects, including silkworms. Because insects are cold-

blooded, paikilotherm, that is, organisms that do not have a constant body temperature. In warm-blooded animals, the body temperature is constant and does not depend on the temperature of the external environment. That is why cold-blooded animals need favorable conditions for their vital activity. The main source of heat is the process of oxidation of organic substances, mainly sugars, in body tissues. The stronger the oxidation process, the more heat is generated. Sunlight, which is an external heat source, is secondary. The degree of use of sunlight depends on the structure, physiological characteristics and color of the animal skin covering.

For the development of the silkworm, it is necessary to spend a lot of energy, that is, the heart, intestine and other organs must perform certain work. Therefore, if the rate of the process takes place at different temperatures, its rate of movement will also change accordingly, that is, the total amount of energy spent to complete one process will remain almost unchanged. Temperatures necessary for the body to work with the least amount of energy can be considered as moderate temperatures. At Vi temperatures, the heat balance in the body is established based on average heat generation processes and does not overheat the body: the temperature in the body of insects is close to the external temperature surrounding them. According to the results of the experiment, since the silkworm is cold-blooded, the physiological processes of silk qsh1ipipg also change with the change in air temperature. It can be said that five-year-old worms have a fast heart rate, metabolism and other properties have the same regularity. The total number of heart beats for a whole year is from 3,892,320 to 4,412,520. In the fifth year of the worm, when the temperature is 25-27.5 ° C, the total number of heartbeats is low. At this temperature, the development of the worm requires less work of the heart and less expenditure of energy.

The amount of heat produced in the body of insects /per gram of weight/ is less than that of warm-blooded animals. In addition, insects cannot control heat loss compared to warm-blooded animals, as warm-blooded animals are protected

by a layer of subcutaneous fat, wool, and feathers. Therefore, the body temperature of insects depends on the temperature of the external environment surrounding them.

The limit of low temperature for the development of mulberry silkworms is +7.5° C, and leaves are not eaten. Around 10° C eats the leaf slowly. The ideal temperature for silkworm is 24-27° C.

The life of the silkworm is adapted to moderate temperatures, and the temperature and the speed of the life processes change in relation to each other. For example, as the air temperature increases, heart rate and movement speed up; appetite increases, bowel function improves, breathing increases.

If the temperature is below the norm, the speed of various processes in the insect organism slows down almost uniformly, but their control does not stop. Therefore, a temporary decrease in temperature does not reduce the vitality of the organism.

Temperature that is too high increases the speed of physiological processes and disrupts the action of enzymes.

Enzymes of cold-blooded animals are not resistant to heat compared to enzymes of warm-blooded animals, Q3 Q5o heat temperature is tolerated for 3-4 days by I-III age worms, 2 days by IV age, and 1 day by V age. 40o heat I-III young worms 1 day, IV-year 15-28 hours; V-age - can last 12 hours. Worms that have hatched from eggs and have not eaten leaves can be kept for 15-20 days in Q3 Q5° C. But their viability decreases sharply after leafing.

As a result of the acceleration of physiological processes under the influence of temperature, the development of the silkworm changes. At a temperature of 17-19o, the first age of a silkworm (with molting) lasts 10-11 days. The worm feeding period lasts about 2 months.

The length of the silkworm's lifespan and molting period depends on many factors. In particular, the number of days of silkworm youth and sleep depending on the temperature is given in Table 1.

Table 1.

How many days silkworms last their young depending on the temperature they are fed

Youth and sleep of worms	Depending on the temperature, the age of the worm continues, days				
	20-21^0	22-23^0	25-26^0	26-27^0 2	8-29^0
First age	3,5	3	2,5	2,5	2,5
First sleep	1	1	1	1	1
Second age	3	3	2,0	2	2
Second sleep	1	1	1	1	1
Third age	4	4	3	2,0	2
The third sleep	1,5	1	1	1	1
Fourth age	5	4	3,5	3,0	3
The fourth sleep	2	2	1,5	1,5	1,5
Fifth age	9	8	7,5	7	6
Total	30	27	23	21	20

The duration of the worm feeding period is 15^0-60 days; 17^{0}da - 52 days; 20-37 days; -27 days at 22^0; -23 days at 25^0-26^{0}C; 29^0-30^0 - lasts 18-19 days.

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