EXCELLENCIA
INTERNATIONAL MULTI-DISCIPLINARY JOURNAL OF EDUCATION
Volume 02, Issue 04, 2024 ISSN (E): 2994-9521

Effect of Air Temperature on Mulberry Silkworm Activity

M. B. Soliyeva [1], S. A. Qo'ldashboyeva [2], D. B. Uzoqbayeva [3]

[1] Senior Teacher, Andijan institute of agriculture and agrotechnologies

[2, 3] Student, Andijan institute of agriculture and agrotechnologies

Abstract:

The silkworm reacts to temperature changes in certain stages of its development. In this matter, it is extremely important to study the effect of temperature on silkworm eggs, worms, cocoons and butterflies, as well as changes in the biological parameters of the next generation.

Keywords: silkworm, egg, worm, mushroom, butterfly, temperature, worm feeding, cocoon productivity, mulberry silkworm physiology, silk gland, air temperature in the worm house, relative humidity, sericin.

Introduction: N. Akhmedov (1992) reports that the average weight of one egg of a silkworm reared according to agrotechnical rules (temperature 25-260C) is 0.525-0.600 mg, while this indicator is 0.475-0.520 mg when reared at high temperature.

According to the information given by Momin Kara (1992), who conducted interesting research in the field of cocooning in Turkey, silkworm eggs are revived centrally in seed factories or in hatcheries of worm breeders. Eggs stored in coolers at +2.50C during winter are transferred to the incubator and kept at 15-160C and 75-80% relative humidity for 2 days. From the third day, the incubator temperature rises to 240C. After hatching, the temperature is raised to 250C, and the relative humidity is raised to 80-85%.

Exceeding or decreasing the temperature during the revival of silkworm eggs has a negative effect on the revival of the silkworm. According to U.N. Nasirillaev (1993), if the temperature in the incubator drops to 200C, it can be extended for 16 days, at 180C for 24 days, and at 160C for 28 days.

H.S. Khomidiy (2004) found out in his experiments that raising the temperature of the incubator to 29-320C, disrupting the balance of embryo activity in the egg, decreasing the humidity in the eggs, the vitality of the worms decreases sharply, and the larvae become susceptible to diseases, which leads to a decrease in the productivity and quality of cocoons.

U.N. Nasirillaev, Sh.R. Umarov (2009) noted that the temperature in the incubation of silkworm eggs should be 24-250C and the air humidity should be 75-80%, and the fact that the temperature in the incubator often changes from this standard has a negative effect on the development of the embryo. In their experiments, the authors report that increasing the temperature to 260C decreases hatching of worms by 86%, 82% at 280C, 79% at 300C, and 76% at 320C.

Studies on the effect of temperature on the development of mulberry silkworm eggs K. Madaminov (1992), N. Akhmedov (1999), N. A. Akhmedov, H. Yuldasheva (2001), U. N. Nasirillaev, S. S. Lejenko (2003) , published by N.A. Akhmedov, O. Oripov (2008).

It is necessary to create certain conditions for the growth and development of the mulberry silkworm in the larval stage. It should also be noted that silkworm larvae are sensitive to air temperature and relative humidity. The temperature may vary slightly depending on the age of the worm (N.G.Bahovutdinov 1966; N.G.Bahovutdinov, N.V.Polyanskaya 1977).

In experiments repeated many times by T. Goyipov (1976), it was proved that it is possible to reach statistically reliably larger larvae by feeding worms under polyethylene film cover at 25-260C and 65-75% humidity in the period after the second sleep.

B.A. Parpiev (1976) believes that the vitality of worms depends on the temperature created for them and gives the following example: if silkworms are kept at a low temperature (20-210C), the viability is 80-83%, if they are kept at a moderate temperature (25-260C) 89-92% established.

U.N. Nasirillaev, R.I. Mukhammadjonov (1977) in their report on the results of their scientific and practical trip to Japan stated that the temperature for young worms is slightly higher 27-280C, for older worms 25-260C, the relative humidity of the air during all periods of worm feeding They write that it will be 80-90%.

N.I.Petkov, A.I.Petrov, and A.A.Yankov (1979) published in Bulgaria the temperature and relative humidity limits for the age of worms.

In India, where the temperature is extremely high, it is very interesting to learn about the temperate regimes of worm feeding. Therefore, S.R.Ullal, M.N.Narasimhanne (1981) stated that young worms in India are kept at a temperature of 26-280C, 80-85% humidity, and adults at 23-240C, 70-75% humidity.

The authors report that this temperature and humidity regime used in worm rearing provides a much higher cocoon yield in this country.

M. No'manov, Sh. Abdugadirov (1987) increase the temperature of the worm house, the development of worms accelerates, and as a result, the period of worm feeding is shortened. But the end of such worm feeding regime is not always positive.

N.A. Akhmedov (1992) based on his many years of experience on the physiology of the mulberry silkworm, during the feeding period of the silkworm, there is never a uniform air temperature and relative humidity during the day. However, changing the air temperature in the worm house from the norm (25-260C), i.e. at low (20-210C) or high (28-290C) level, has a negative impact not only on the growth of worms, but also on the growth dynamics of the silk gland.

The research carried out at the Ukrainian Scientific Research Institute of Sericulture and Kharkiv State University reports that it is possible to increase the viability and fertility of silkworms by significantly changing the temperature (S.V. Sukhanov, O.A. Shalamova, 1996).

A.B. Yakubov (1997), S.S. Lejenko (1998), E.Kh. Tojiev (1999) emphasize that the growth and development of mulberry silkworms cannot be achieved without creating a certain temperature limit.

N.A. Akhmedov (1999), who worked effectively in researching the ecology of mulberry silkworms and agrotechnics of feeding, observed the development and growth of silkworms at temperatures ranging from 200C to 300C, proving that the viability of worms, the average weight of cocoons, and the yield from 1 box of worms depend on temperature. received information.

In the researches of H.S. Khomidiy, A.N.Papaskiri (2004), the viability of worms fed under conditions of normal temperature of 250C and relative humidity of 70-75% was 94.8%, and the average weight of the cocoon was 2.4 g, while the amount of silk in the cocoon was 534 mg. in the variant maintained at a high temperature of 290C, these indicators are proportionally reduced to 53.0%, 2.0 g and 467 milligrams.

N.Akhmedov, Ch.Bekkamov, S.Valiev, U.Jumanova, Kh.Rakhmanova, U.Akhmedov, B.Melikov (2010) observed that the larval period changes depending on the temperature as follows: 20-210C-30 days, 22-230C 27 days, 23 days at 25-260C, 21 days at 26-270C and 20 days at 28-290C. According to the authors, lower or higher temperature (25-260C) during worm feeding has a negative effect on the viability of worms, biological characteristics of cocoons, and fertility.

In scientific journals and collections, temperature and relative humidity not only affect the biological characteristics of the silkworm, but also can cause changes in the productivity and technological performance of the cocoons. In this direction, the experiments of S. Toshpolatov (1969) are characteristic. In the author's experiments, lowering the temperature to 210C during the cocooning period caused a decrease in silk cocoon sericin content (3.65%) and a decrease in its solubility by 15%. When the cocooning process was carried out at 29 degrees, the amount of sericin was 4.1%, and the yield of raw silk from cocoons increased from 43.1% to 45.4%, and cocoon wetting increased from 78.4% to 95.1%. So, it is possible to control the technological properties of the cocoon by changing the temperature during the cocooning period.

A.D. Mamedova (1973) conducted her experiments in the conditions of Azerbaijan and believed that the age of worms and slightly higher temperature (27-280C) during cocoon wrapping not only decrease the biological indicators of the cocoons, but also the technological properties, and defects appear in them.

In the article of T. Kovaguchi (1988) translated from the magazine "Japanese Silkmaking" and printed in the magazine "Silk" (No. 2, 1989), it is reported that the increase in the relative humidity of the air in the worm house has a negative effect on the cocoon hatching.

N.A. Ahmedov, A. Abdurahmanov (2006) believe that during the period of cocooning, the influence of external environmental factors is stronger, especially that the temperature should be at a moderate level. The authors consider that cocoon wrapping is acceptable at 25-260C, and if the temperature is 280C and higher, the technological indicators, first of all, cocooning, decrease by 2-3%.

The effect of air temperature and relative humidity on the biological characteristics of paikilotherm insects B. Hardwald, M. Hange (1963), Lesson S., Summer L. (1979), Picult L.P. (1979), Tijen W. (1979), Takamiya K., Kiposhita D., Kato M. (1982), Sengupta K., Laismal I., Singh SP. (1984-1985), L.S. Lapina (1991), A.Z. Zlotin, V.N. Kirichenko, O.M. Juravel (1996), N.A. Akhmedov (2000, 2001), Sh.R. It is described in the works of Umarov (2004), H.S. Khomidiy (2004), U.N. Nasirillaev, Sh.R. Umarov (2010), U. Jumanova, N.A. Akhmedov (2011).

Thus, the above-mentioned scientific works show that it is possible to change and finally control the physiological, productive and technological indicators of silkworm eggs based on changing external environmental factors during the incubation, larval care, and cocoon wrapping processes.

References.

1. Soliyeva, M. B., Sh, T. J., & Asronov, E. K. (2021). To Learn Of Biological And Productive Indicators Of Imported Mulberry Silkworm Breeds. *The American Journal of Applied sciences*, *3*(04), 131-137.
2. Asronov, E. K., & Soliyeva, M. B. (2020). The importance of feeding silkworms under polyethylene. *ACADEMICIA: An International Multidisciplinary Research Journal*, *10*(10), 1169-1174.
3. Асронов, Э. К., & Солиева, М. Б. (2020). ВЛИЯНИЕ ИЗМЕНЕНИЯ ТЕМПЕРАТУРЫ НА ПРОДУКТИВНОСТЬ И КАЧЕСТВО КОКОНОВ ВО ВРЕМЯ КОРМЛЕНИЯ ТУТОВОГО ШЕЛКОПРЯДА. Экономика и социум, (12-1), 388-391.
4. Soliyeva, M. B., Yuldasheva, K. T., Xatamova, X. K., Kimsanova, X. A., & Isroilova, S. S. (2021). The effect of shelf life of live cocoons on their temperature and quality. *Asian Journal of Multidimensional Research (AJMR)*, *10*(3), 254-260
5. Туйчиев, Ж. Ш., Убайдуллаев, С. Ш., Турдиева, Ф. Т., & Солиева, М. Б. (2015). ИЗМЕНЕНИЕ ДОЛИ ДЕФЕКТНЫХ КОКОНОВ В ЗАВИСИМОСТИ ОТ СРОКОВ ПОСТУПЛЕНИЯ НА ЗАВОД. *Современные тенденции развития науки и технологий*, (4-2), 78-81.
6. Туйчиев, Ж. Ш., Мирзаев, Р. О., Солиева, М., & Гафурова, Ю. К. (2016). ЗАВИСИМОСТЬ КАЧЕСТВА КОКОНОВ ПЕРВИЧНОГО ПОКОЛЕНИЯ ОТ КОЛИЧЕСТВА ФОРМ ИЗМЕНЕННЫХ ИЗ ПАРТИИ ПЛЕМЕННЫХ. *Современные тенденции развития науки и технологий*, 124.
7. Yuldasheva, K. T., Soliyeva, M. B., Daminov, X. E., Botirov, S. T., & Mamadjanova, G. S. (2021). The process of growth of vegetative organs of olive seedlings in protected areas during the development phase. *ASIAN JOURNAL OF MULTIDIMENSIONAL RESEARCH*, *10*(4), 287-293.
8. Sokhibova, N. S., Nazirova, M. I. K., & Botirovna, S. M. (2020). INFLUENCE OF REARING SILK WORMS WITH HIGH PRODUCTIVE MULBERRY LEAVES ON THE BIOLOGICAL INDICATORS OF SILK GLAND AND RAW SILK EFFECTIVENESS. *Life Sciences and Agriculture*, (2).
9. Yuldasheva, K. T., Soliyeva, M. B., Kimsanova, X. A., Arabboev, A. A., & Kayumova, S. A. (2021). Evaluation of winter frost resistance of cultivated varieties of olives. *ACADEMICIA: AN INTERNATIONAL MULTIDISCIPLINARY RESEARCH JOURNAL*, *11*(2), 627-632.
10. Xatamova, X. K., Yuldasheva, K. T., Soliyeva, M. B., Kimsanova, X. A., & Juraboyeva, S. M. (2021). Methods of preserving subtropical fruits. *Asian Journal of Multidimensional Research (AJMR)*, *10*(1), 109-115.
11. Yuldasheva, K. T., Soliyeva, M. B., Xatamova, X. K., & Kimsanova, X. A. (2020). Effect of arbuscular mycorrhiza on micro propagated olive. *ACADEMICIA: AN INTERNATIONAL MULTIDISCIPLINARY RESEARCH JOURNAL*, *10*(12), 1491-1498.
12. ВАХОБОВ, А., СОЛИЕВА, М., & ХАТАМОВА, Х. СОРТА КРАСНОКОЧАННОЙ КАПУСТЫ ДЛЯ ПОВТОРНОЙ КУЛЬТУРЫ. *ИРРИГАЦИЯ-МЕЛИОРАЦИЯ*, 57.
13. Асронов, Э. К., Салиева, М. Б., Салиев, С. А., & Давлатов, Х. Р. (2018). ХРАНЕНИЕ ПЛОДООВОЩНОЙ ПРОДУКЦИИ. In Северный морской путь, водные и сухопутные транспортные коридоры как основа развития Сибири и Арктики в XXI веке (pp. 264-266).

14. Xatamova, X. K., Soliyeva, M. B., Kimsanova, X. A., Yunusov, O. B., & Yuldashev, R. T. (2021). Methods Of Drying Subtropical Fruits And Their Importance For Human Health. *The American Journal of Applied sciences*, *3*(05), 148-154.

15. Асранав, Э. К., Салиева, М., & Алижанов, Ж. (2019). ЛЕЧЕБНЫЕ СВОЙСТВА ТУТОВНИКА. *Академическая публицистика*, (5), 24-28.

16. Alisher, V., Komiljonovna, K. H., Botirovna, S. M., & Yulbarsovna, D. S. (2020). БАМИЯ-ШИФОБАХШ ЎСИМЛИК ВА УНИ ЕТИШТИРИШ ТЕХНОЛОГИЯСИ. *PalArch's Journal of Archaeology of Egypt/Egyptology*, *17*(6), 3479-3482.

17. Soliyeva, M. B., & Abdumutalipova, G. A. (2022). Influence of cocoon wrapping agrotechnics on the quality of cocoons. *ACADEMICIA: An International Multidisciplinary Research Journal*, *12*(2), 380-386.

18. Soliyeva, M. B., & Nabiyeva, Z. A. (2022). Influence of Silk Gland Activity on the Quality and Technological Performance of Cocoons. *European Multidisciplinary Journal of Modern Science*, *6*, 333-339.

19. Soliyeva, M. B., & No'monov, N. N. (2022). Processes for Obtaining Quality Silk Raw Materials From Industrial Silkworm Cocoons. *CENTRAL ASIAN JOURNAL OF THEORETICAL & APPLIED SCIENCES*, *3*(6), 88-92.

20. Soliyeva, M. B., No'monov, N. N., & Isroilova, S. S. (2022). INFLUENCE OF SILKWORM FEEDING ON QUALITY MULBERRY LEAVES ON LARVAL VIABILITY AND BIOLOGICAL PARAMETERS. *Web of Scientist: International Scientific Research Journal*, *3*(6), 378-386.

21. Ларькина, Е. А., Акилов, У. Х., Туйчиев, Ж. Ш., Асронов, Э. К., Солиева, М. Б., & Абдикаюмова, Н. К. (2022). Использование способов управления размножением тутового шелкопряда (Bombyx mori L.) в практическом шелководстве. *Аграрная наука*, *1*(7-8), 114-120.

22. Soliyeva, M. B., Isroilova, S. S., & Abdullayev, A. A. (2022). The Influence of the External Environment on Hatching and Mating of Butterflies. *International Journal of Formal Education*, *1*(10), 141-147.

23. Soliyeva, M. B., Israilova, S. S., & Abdullayev, A. A. (2022, October). The Effect of Moisture on the Silk Worm. In *International Conference on Multidimensional Research and Innovative Technological Analyses* (pp. 122-126).

24. Soliyeva, M. B., Isroilova, S. S., & Abdullayev, A. A. (2022, October). Haroratning Ipak Qurti Tanasidagi Fiziologik Jarayonlarga Ta'siri. In *International Conference on Multidimensional Research and Innovative Technological Analyses* (pp. 118-121).

25. Soliyeva, M. B., & No'monov, N. N. (2023). Establishment of Nutritious Mulberries in Our Republic. *Web of Synergy: International Interdisciplinary Research Journal*, *2*(2), 145-150.

26. Soliyeva, M. B., & Mirzaxmedova, G. L. (2023). INCREASING THE LEAF YIELD OF THE MULBERRY TREE. *Horizon: Journal of Humanity and Artificial Intelligence*, *2*(5), 179-183.

27. Soliyeva, M. B., & Yusufjonov, J. I. (2023). Features of the Construction of Bushes. *Web of Semantic: Universal Journal on Innovative Education*, *2*(5), 288-292.

28. Soliyeva, M. B., & No‘monov, N. N. (2023). DASTA TURLARI VA ULARNI TAYYORLASH. *Science and innovation*, *2*(Special Issue 6), 205-207.

29. Soliyeva, M. B., & Sirojiddinova, M. A. (2023). Chemical Composition of Coir Fiber. *Information Horizons: American Journal of Library and Information Science Innovation (2993-2777)*, *1*(9), 102-106.

30. Soliyeva, M. B., & Mirzaxmedova, G. L. (2024). Basics of the Silk Worm Organism Functions and Growth of the Worm Body. *Web of Semantics: Journal of Interdisciplinary Science*, *2*(2), 31-36.

31. Ганиева, У. А. (2018). Значение аудита в банковском секторе. Экономика и бизнес: теория и практика, (3), 29-31.

32. Soliyeva, M. B., & Sirojiddinova, M. A. (2024). Types of silk worm. *Miasto Przyszłości*, *47*, 93-97.