Impact Factor: 9.9 ISSN-L: 2544-980X

The State of Special Worm Shelters in Our Republic and Measures for their Improvement

M. B. Soliyeva [1], *D. M. Nurmamatova* [2]

Annotation: Special worm houses can be widely used not only during the worm feeding period, but also after harvesting the cocoons, for storing products, feeding livestock, drying cotton and storing grain products. Special worm houses may have rooms for feeding worms, preparation and storage of leaves, cocoon wrapping and sorting, storage of equipment used in worm feeding, rest and other rooms.

Keywords: Special worm houses, mulberry, storage of leaves, air temperature, mulberry silkworm, symniks, sericulture, agrotechnics, during worm feeding.

Introduction: Special Worm Houses In order to develop cocoon breeding in farms, increase the yield and quality of cocoons from silkworms, attention is being paid to feeding worms in Special Worm Houses and building modern worm houses. Because the Cabinet of Ministers of the Republic adopted Special Decisions on this in 2017.It is better to build a worm house near the trees and near the main road. When choosing a building site, you should pay attention to the climatic conditions, which direction to build. 2-3 rows of trees are planted around the worm house to protect from wind and sunlight. When one box of worms is fed, about 285-300 kg of dung and about 600 kg of ghee are excreted as waste. To dispose of these wastes, a deep trench of 1m3 for 10 boxes of worms and about 30m2 of space for storing ghana seeds is required at a distance of 150-200m from the wormery. There should be a natural water source near the worm house, a leaf storage room, and especially for washing during the summer worm feeding period. During the construction of the worm house, it is necessary to have an additional area of 60-70 m2, feeding, 18-20 meters for feeding 1 box of worms, following the rules of worm feeding and agrotechnics. It is necessary to provide heating and ventilation sources in order to create the required air temperature. Heating sources meet the following requirements: 1. Uniform distribution of heat to all parts of the worm house; 2. Rapid rise in temperature; 3. Ability to maintain temperature for a long time; 4. Fuel must be used sparingly. It is not recommended to use tunic stoves in worm houses, because they quickly give very high temperatures, dry the air and cool down quickly. As a result, the temperature in the worm house changes dramatically. Special furnaces made of baked or raw bricks are used to maintain a constant temperature in special capital worm houses. The body of the stove is placed in an upright vertical position, and the fire hole with a hermetically sealed vent and elbow flue door is outside the room. 300-500 bricks are enough to build such ovens, depending on the size of the oven. It can provide a room of about 200 cubic meters with 250 degrees of heat. In addition, stoves designed for heating incubators can be used. These are also made of brick, 160 cm high, 125 cm long, 50 cm wide, and the chimney is set in an elbow. Gas, water heaters, electricity, etc. in rural areas with sources of heating, this type of energy can be used for heating systems for heating worm houses. Ventilation of the worm house is carried out in order to remove excess moisture and polluted air from gaseous products released during the exchange of substances in worms. In addition, ventilation helps to control the temperature and humidity of the building. The Italian scientist Dandolo studied the effect of ventilation on the productivity of mulberry silkworms. He fed one batch of worms in a closed building, and the second batch under normal conditions with good ventilation. One box of worms fed in a closed room produced 1.2 kg of cocoons, and 48 kg of cocoons were obtained from well-ventilated worms. The carbon dioxide content of the

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

greenhouse air should not exceed 0.2%. According to the conducted experiments, 1 kg of worms release 0.87 g of carbon dioxide gas in one hour. 1g can contain approximately 2000-2500 worms (depending on the breed). 1 box of worms (at 19 g) contains an average of 45,000 worms, and at the end of the fifth year, one worm weighs 5 g, so the weight of one box of worms is 45,000 x 5 x 225.4 kg. 1 box of worms releases 2377 liters of gas in 1 day. In order for the gas content of the air to not exceed 0.1-0.2 percent, 1 box of worms should receive 2377 cubic meters of air per day. In addition, it is necessary to take into account the servants involved in feeding the worms. On average, one person needs 500 liters of air per hour, and 12 cubic meters of air per day. Therefore, a building with a volume of 100 cubic meters needs to be changed approximately 24 times in 1 day.1 worm of the fifth instar shines 728 mg of water per day. So, 1 box of five-year-old worms emits 45,000 x 728 mg q 32.76 kg of water per day.1 cubic meter of absolute dry air absorbs (absorbs) about 10g of water vapor at 200 degrees. If we consider that the air entering the worm house contains about 50 percent moisture, then the air leaving the room is fully saturated, that is, each cubic meter of air takes 5 g of moisture out of the worm house. In this case, the air requirement of 1 box of worms per day is: 31000 : 5 = 6200 cubic meters in the fifth year of the worm. Mulberry leaves given to worms also brighten the water. Therefore, 1 box of five-year-old worms needs 10,000 cubic meters of air per day.The following amount of air should be supplied to the kennel every second:

10000 m3 : (24 x 60 x 60)= 0.115 m3

This amount of air should be passed through the ventilation hole. If the diameter of the ventilation hole is large, the speed of wind movement will be low. Air movement per second at 0.5m vent hole:

0.115 : 0.5 = 0.23 m2, that is, each box of five-year-old worms needs one 0.5 x 0.5 x 25 m2 ventilation tube.

The frequency of complete air exchange in the dormitory depends on the hygrothermal regime of the external environment, ventilation devices. The dependence of air exchange on the hygrothermal conditions of the external environment and the method of ventilation (Table 6) and the air exchange process in the worm house proved that it affects the biological indicators of the silkworm and the technological properties of the cocoon.

According to the rules of agrotechnics, the period of ventilation during complete air exchange of the worm house should be from 20 to 30 minutes, depending on the temperature of the outside environment. In an unheated worm house, the duration of air exchange depends on the internal and external temperature and the ventilation method. It is advisable to carry out ventilation with the help of special devices in order to ensure complete exchange of air in the dormitory. The VK-3 electric fan, which pulls out 260 m3 of air per hour, was tested. As a result of the observations, it was found that depending on the size and age of the worm house, the air flow speed is 0.12-0.15 m/sec to 0.22-0.25 m/sec, which is normal for complete air exchange.

Currently, silkworms are kept at 25-27°C in collective farms of our republic. The complete air exchange in the worm house with a temperature of 26°C can be carried out with the help of the VK-3 electric fan, delivering the speed of air movement to 0.12-0.15 m/sec, for an average of 40 minutes. During the ventilation period, the temperature in the worm house drops by only 0.5–0.6°C, and it takes 21–22 minutes to restore it to its previous state. It takes 25 minutes for complete air exchange when the air in the worm house is ventilated at a speed of 0.22-0.25 m/sec, and the temperature drops by 0.3°C and humidity by 2.5% during this period. It takes 25 minutes to restore it. In addition, it does not matter whether the temperature and humidity of the outside air is high or low. It took 64 minutes for the air to be completely exchanged when the air was ventilated in a simple way, that is, by opening the door or window, and the temperature decreased by 2-3°C, the humidity decreased by 9-13%, and it took 53-56 minutes to bring it back to its previous state. (Information of N. Akhmedov 1999). Uniform distribution of temperature and humidity in the worm house depends on the type of worm house, heating and ventilation method. The difference in temperature between the lower and upper floors of shelves is 1.5-2°C or 0.75-1.0°C per meter, 2-3°C horizontally in large rooms. The temperature changes are different in different places of the worm houses, depending on the location of the door,

window ventilator body heating systems. Depending on the temperature and humidity level and where the worms are located in the worm house, their development, cocoon weight was different, the yield of cocoons was 69 kg for 1 box of worms in the lower layer, 74 kg in the middle layer, and 79 kg in the upper layer.

Variation of temperature inside depending on the type of worm house.

It is known that temperature plays a very important role in agrotechnics of silkworm feeding. Regardless of the weather, temperature and humidity are important. Therefore, it is important to have stoves in every worm house, and to use them correctly.

The place where the temperature is measured	In a heated worm house (size 5x3m, height 3m)			In an unheated worm house (size 9x5m, height 4m)		
	Downstairs temperature	Temperature on the middle floor	Temperature upstairs	Downstairs temperature	Temperature on the middle floor	Temperature upstairs
1. At the entrance to the toilet	23,0^{0}C	24,7^{0}C	24,8^{0}C	21,5^{0}C	22,2^{0}C	23^{0}C
2. In the middle part of the cemetery	22,1^{0}C	23,0^{0}C	24,0^{0}C	20,4^{0}C	21,3^{0}C	22^{0}C
3. At the end of the toilet	21,1^{0}C	22,4^{0}C	23,0^{0}C	19,5^{0}C	20,3^{0}C	21,1^{0}C

Variation of cocoon weight depending on the location of the worms in the wormery:

The location of the worms in the wormery	Average cocoon weight (g)		
	Downstairs	On the middle floor	On the top floor
1. At the entrance to the shelter	2,55	2,86	3,11
2. In the middle of the wormhole	2,10	2,40	2,76
3. At the end of the wormhole	1,81	2,00	2,31

Worm houses used for worm breeding in our republic are divided into three categories.

1- Special capital buildings, that is, brick buildings that fully meet agrotechnical requirements. These include buildings specially built for worm houses - worm houses, farm buildings adapted to worm houses, clubs, palaces, school buildings. In buildings of this type, it is possible to create a complete hygrothermal regime.

2-Pakhsadan or thin-walled buildings.

3-Light devices: fenced porches, sheds. Devices of this category are used only for feeding adult worms, depending on the arrival of external weather.

Lifters (syomniks). Removal of worms from one place, thinning, replacement of gnats is carried out with the help of leaves or cuttings. But applying such methods to worms of the first age creates difficulties. Therefore, in order to facilitate the work, hoists are used. Through these, it is easy to get the gana by lifting the worms with their food on the paper trays. The boxes are made of 25 x 20 cm thick wrapping paper. The paper is perforated according to the size of the worm using special hole-forming machines. Depending on the size of the worm's body, the paper lifters (syomniks) are usually used for first and second instar worms. Then it is removed together with the ghana.

In order to protect silkworms from pests and ground (floor) moisture, it is necessary to keep them in special cages. Shelves are made of various materials: wood, iron, beams, beams, rods, reeds, etc. is made. All types of racks are divided into two groups: sectional or collapsible racks and permanent racks. Collective trays are used for feeding worms of all ages. They can be made of 2,3,4 and 8-10

layers and installed in an upright position. Permanent suri-etajerkas, usually 2, 3, 4 layers, are installed in some special worm houses.

These are 2-3 stories high and are made of logs cut to certain lengths. The length of the shelf is 2m, width is 1m, the floor space is 0.7-0.8m. Such shelves can be used in different rooms. In addition, the number of these shelves is small, and in order to create more feeding space, they can be placed at a distance of 2m and connected to each other by racks or wires and ropes to create a worm feeding space along the length of the building. In this case, the shelves act as an intermediate support.

In the recent period, standard and 3-layer steel trellis are used in silk industry. The dimensions of these shelves are 2 x 1 m, height 1.95 m. The distance between floors is 0.4 m from the ground, and the distance between floors is 0.7-0.8 m. These racks can be placed along the length of the worm house, and their spans can be connected to each other with long rods or wire and ropes. These shelves can be used for several years.

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. 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. Soliyeva, M. B., & Sirojiddinova, M. A. (2024). Types of silk worm. *Miasto Przyszłości*, *47*, 93-97.
32. Soliyeva, M. B., Qo‘ldashboyeva, S. A., & Uzoqbayeva, D. B. (2024). Effect of Air Temperature on Mulberry Silkworm Activity. *Excellencia: International Multi-disciplinary Journal of Education (2994-9521)*, *2*(4), 250-255.