

# New technology reeling of silk cocoons

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**Sericulture is a branch of ancient traditions in Georgia and it contributed greatly to the economic might of the country and to a matter of material welfare of its population.**

**Progress of sericulture in Georgia was contributed not only by the favorable geographical location and perfect natural conditions, but also by high demand on Georgian silk on the world market.**

**Georgian silk always occupied the advanced place in the world thanks to its quality and even today we have such high-grade mulberry silkworm breeds thread of which is distinguished by extreme fineness. High quality fabric such as “crepe chiffon” is made of this thread, which is rather costly on international market. In 1998 at the international exposition held in Spain fabric made of this thread received the supreme award “Platinum Star”. Mulberry silkworm breeds yielding such silk thread “Mziuri”, “Digmuri” are selected by Georgian researchers. Thread length reaches 2000-2200 meters, while according to the world standard it equals to 1500-1700 meters.**

**Today, irrespective of critical situation created in Georgian sericulture, the Institute of Sericulture continues its active functioning. In recent years highly productive breeds and hybrids resistant to mulberry and mulberry silkworm diseases have been selected; new methods were introduced in feeding mulberry silkworm and new technologies of initial processing of cocoon were developed.**

**We have developed and practically tested new technology of silk thread production, according to which a farmer (cocoon producer), by the use of special suspension, will be able to start winding of cocoon produced by him on the very third day of commencing cocoon formation. This method will enable us to realize cold winding of live cocoon. Thanks to this new technology silk thread will retain the best properties and the costs made for thread production will be brought to minimum.**

**Inculcation of regional cocoon thread winding is the prerequisite for starting mass winding of raw cocoon thread. We can obtain not only silk thread exceeding the rate of the earlier obtained by 30%, but also thread from defective cocoon, since suspension developed by us will enable us to reel not only high quality, but also twin-cocoon and cocoon rejected after selection. By cold winding of live cocoon a farmer will save not only transport costs but also costs for cocoon drying and storing.**

**The part of live cocoon, which will not yield to winding till the moment moth leaves cocoon, can be stored in refrigerator. We have studied the level at which the cocoon must be cooled and the duration of cooling in order to kill pupa and to preserve capacity of cocoon to be reeled, as well as to preserve its natural properties. As a result of long-term observations it was proved that at  $-5^{\circ}$  temperature, storing in refrigerator for 8 hours is enough for killing pupa, and special suspension should be prepared just before winding to prevent significant injury to cocoon and thread by killing pupa.**

**The fact should be emphasized that as a result of initial treatment of live cocoon (that is drying) natural properties of thread suffer worsening and yield is decreased. Therefore it will be expedient to reel thread from live cocoon. As to the comparison of reeling in suspension and in warm water, live cocoon impregnated in suspension at 4°C showed far better winding capacity than that reeled in warm water.**

**Thus, the method of preliminary treatment of cocoon by the use of special suspension, developed by us, is practically very significant and economically profitable. Experiments were carried out at the terms of thread winding on individual machines, when 0.2, 0.4 and 1% suspensions were used; cocoon processing duration equaled to 10, 20 and 30 minutes. It should be stated that thread yield wound from cocoon soaked in 1% suspension for 20-30 minutes exceeds by 1,5-7,0% that wound from cocoon wetted in warm water. Thread yield increase is achieved at the expense of decrease of wastes.**



- 1. We have developed light shelves with declined bottoms for mulberry silkworm feeding. Under these feeding shelves, additional shelves are affixed, askew, on which polyethylene film is stretched. It prevents accumulation of excrements isolated by silkworm in a bed/settling, excrements fall into declined shelf arranged under the feeding shelf, and finally they fall into a box that is placed under the shelves, which excludes silkworm diseases.**
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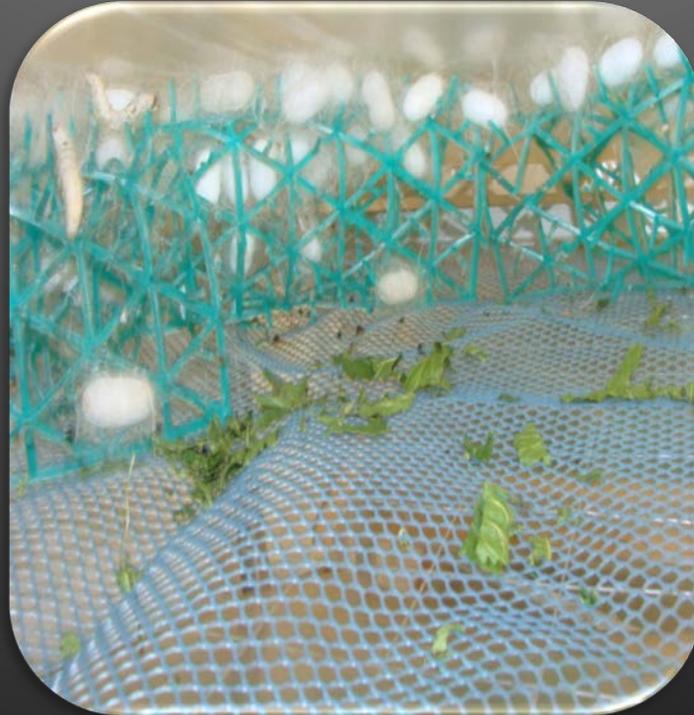




2. The process of nutrition is made easier, in particular, it is not necessary to remove a bed often; it doesn't cause bed molding, since excrements don't stay on shelves; bed is dry, which excludes diseases in silkworm.



Silkworm, instead of a paper, is placed on polyethylene nets, with holes, which provides dryness of a bed. These nets are of multi use designation; nets can be washed and then used.





**Thank for your attention!**