Costs and Profits in the Productive Process of Sericulture

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SUMMARY

The growth of sericulture comes through the prominence of culture in both the family workforce and the financial area. Lately this culture is getting scarce and more and more the spinning industries are valuing the product, in the last five years the raw material of silk, that is, the cocoon of the silkworm had an increase in average of 60% of the price because of the lack of material for the production of silk threads. One of the qualities of this management is that large areas of land are not needed for the cultivation of mulberry, which is the food of the silkworm, another quality that stands out is the low cost of production which does not pose great risk for the producer. The costs of production, from the planting and cultivation of the mulberry tree, the costs of manufacturing the shed where the larvae are housed and supposedly the silk cocoons, the costs with inputs and others will be exposed in this work. It will also show the advantages and disadvantages of the crop in the region, which is influenced from the climate to the low and high prices in relation to the quality of production, will explain the basics of management and care and be taken to have a good production and a good source of profits.
**Keywords:** Matter Production, Economic Feasibility, Positive and Negative Points, Silkworm.

**INTRODUCTION**

Sericulture or sericulture is a process that began in China with the aim of producing silk fabrics. The sericícola activity involves the production of cocoons, which the industries transform into yarns, and consequently in silk fabrics. It also consists in the cultivation of the mulberry, in order to feed the silkworm which produces the cocoon, and the activities related to the production and preparation of inputs until obtaining the desired product.

This activity is influenced by many factors, mostly variable, uncontrollable and unpredictable, such as climatic conditions and other variables that can make the activity a constant risk of losses or profits to small producers.

The sericícola activity has its greatest development in the small rural properties, being a good alternative of diversification in the property, contributes to the sustainable development of the region by virtue of its social aspect, being of low environmental impact, occupying small space of exploration to be realized, small working capital, using only family labor.

Regarding the identification of the term "family agriculture" as a definition, Panzutti (2005, p.15) interprets as follows:

There is no universal standard for defining 'family farming' that clearly identifies what we are referring to. The reference of this expression can be thought of the conception used by the Brazilian sectorial policy; to the destination of the credit; to some indicators of enterprise scale; the personal exploitation of the property by the farmer and his family; to the size of crops; to the annual gross income obtained; the quantity produced; productivity of land; the intensity of land use and labor; beneficiaries of the targeted financing programs.

About 95% of the products are exported to China and Japan being only 5% for domestic production, so its price and quoted through the foreign currency reducing its devaluation in relation to the real, besides the working capital is low, has low cost of inputs and a rapid return on invested capital, low cost in production, generating monthly revenues around nine months annually.

The overall objective of this will be to demonstrate a culture that generates a greater profit for family farms and smallholders, and others; an agriculture that takes space in the market for its value and for the recognition of the raw material. The costs and profits of silk production, the advantages and disadvantages, will be demonstrated on average.
The sources of income and costs for the production of larvae and cocoons will be specified, showing examples and tables in order to clarify the subject better.

This approach arose from the fact that it is a little known culture and awakens curiosity in society, a culture where it does not need to use machines and implements and that brings benefits mainly to the small farmers, a differentiated theme, but that arouses the interest of many people who do not know about the subject or have some kind of doubt.

CASE STUDY

This study was carried out in a rural property located in the municipality of Gaúcha City, highway 51, km 10 towards Nova Olímpia, located in the northwest region of the state of Paraná, data were collected from a nine-month annual harvest period, which are from September 2015 to May 2016.

In the survey in question, the planting and maintenance of the mulberry trees used to feed the caterpillars were the responsibility of the producer, who cultivates a bushel of planted blackberries, the same that will be cultivated and preserved against weeds for feeding the worm-of silk.

The result of the product depends on the good conditions of the mulberry to be able to absorb quality, because in the sale a selection of cocoons is made to be withdrawn the total income to be demonstrated in that production, where the cocoon weight, the weight of the silk and the content of the silk produced by that animal, that is, the more appropriate the blackberry for the silkworm, the better the gain in production. A suitable mulberry tree would be the one rich in nutrients, always rich in water in its leaf and pruned at the right time, a crop that is always cultivated and kept away from weeds.

The silkworm is received by the producer at the beginning of the third age. Previously, it is up to the spinning company to establish species crossings, egg production and larval breeding in the first two ages. The sericicultor is responsible for the breeding of the larvae from the moment they arrive at the property until the end of the fifth age, at which time they weave the cocoons, then they are harvested, sorted and delivered back to spinning as raw material. This breeding process varies from 25 to 29 days of handling the sericicultor's property, during which period it receives the larvae in the third age and then delivered as cocoons, already cleaned, classified and packaged for travel to the matrix.

For Eliseu Martins (2003, p.21) "Expenditure is relative to the good or service used in the production, that is, of other goods or services". This means that in the production of the silkworm the farmer has an expense with the preparation and planting of the mulberry trees and the construction of a management shed, but it will be a single expenditure carried out only once, once this process of construction and planting has been carried out, it will only be necessary to maintain and cultivate the plants.
In order to obtain larvae and start the breeding of the culture presented here, some essential requirements are needed to be used through the production, which will be demonstrated next. The table below will show the essential equipment for the creation and maintenance of the silkworm, without them it will not be possible to carry out all the process of the crop, and thus begins to have the first costs with the creation of the animal.

**Table 1.** Structure of the existing fixed capital for the production of silkworm larvae (Cidade Gaucha - PR).

<table>
<thead>
<tr>
<th>ITEM</th>
<th>AMOUNT</th>
<th>UNIT VALUE ($)</th>
<th>TOTAL VALUE ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLEANING MACHINE</td>
<td>1</td>
<td>450.00</td>
<td>450.00</td>
</tr>
<tr>
<td>CASULOS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FILTER MASK</td>
<td>1</td>
<td>30.00</td>
<td>30.00</td>
</tr>
<tr>
<td>LANCA FLAMES</td>
<td>1</td>
<td>18.00</td>
<td>18.00</td>
</tr>
<tr>
<td>COMPRESSOR PUMP</td>
<td>1</td>
<td>170.00</td>
<td>170.00</td>
</tr>
<tr>
<td>ROSSADEIRA</td>
<td>1</td>
<td>640.00</td>
<td>640.00</td>
</tr>
<tr>
<td>PAPELA FOREST</td>
<td>150</td>
<td>43.20</td>
<td>6480.00</td>
</tr>
<tr>
<td>POLIPROPYLENE</td>
<td>180</td>
<td>2.90</td>
<td>522.00</td>
</tr>
<tr>
<td>TAPE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GALPÃO DE MANEJO</td>
<td>1</td>
<td>8200.00</td>
<td>8200.00</td>
</tr>
<tr>
<td>OTHER EQUIPMENT</td>
<td>1</td>
<td>500</td>
<td>500</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td></td>
<td><strong>17010.00</strong></td>
</tr>
</tbody>
</table>

So the costs are not only destined directly to the raw material or product, but to the expenses that we have in the production, and for the larva to grow and produce silk it is necessary to feed it with branches of blackberry, which will also have costs to keep always clean of pests and always healthy. The following table shows the amounts spent for the planting of mulberry trees, input applications and maintenance of the crop, taking into account that the values exposed are only those paid to third parties, such as:

- Materials used (inputs);
- Days worked (daily);
- Hours worked (agricultural machinery);
- Transport (Freight).

**Table 2.** Total Cost of Production (CTP) on the preparation of mulberry, for the annual production of
After the planting, the producer will manage the mulberry tree, should wait a period of 10 to 12 months before lodging the first crop, at which time the mulberry tree will sprout and develop its branches. The silkworm, contrary to what everyone thinks, feeds on the leaves contained in the branches of the mulberry tree and not on the fruits, so the pruning should be done every time they remove their branches or branches to feed the animal.

When the producer receives the larvae, they arrive at an age called "old age", it means that two steps have already been passed:

**Table 3.** Total Cost of Production (CTP) on inputs for the production of silkworm cocoons in nine harvests (CIDADE GAUCHA - PR, 2015/2016).

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>SPECIFICATION</th>
<th>AMOUNT</th>
<th>UNIT VALUE ($)</th>
<th>TOTAL ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUPPLIES</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LIMESTONE</td>
<td>TN</td>
<td>5</td>
<td>120.00</td>
<td>600.00</td>
</tr>
<tr>
<td>CHEMICAL FERTILIZER</td>
<td>KG</td>
<td>400</td>
<td>0.95</td>
<td>380.00</td>
</tr>
<tr>
<td>ORGANIC FERTILIZER</td>
<td>TN</td>
<td>7</td>
<td>90.00</td>
<td>630.00</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td></td>
<td></td>
<td><strong>1,610.00</strong></td>
</tr>
</tbody>
</table>

After the planting, the producer will manage the mulberry tree, should wait a period of 10 to 12 months before lodging the first crop, at which time the mulberry tree will sprout and develop its branches. The silkworm, contrary to what everyone thinks, feeds on the leaves contained in the branches of the mulberry tree and not on the fruits, so the pruning should be done every time they remove their branches or branches to feed the animal.

When the producer receives the larvae, they arrive at an age called "old age", it means that two steps have already been passed:
-First age: ovulations are still in eggs or seed as called;

-Second age: seed development, ie, birth;

When it reaches the end of the second age where they cease to be seeds and are already matured, they are sent to the rural producers so that they can be feeding and protecting them from harm that could harm them. From ovulation to the end of the second age is a process that lasts around 21 days where they are contained in the brooder, which is the responsibility of the spinning company. From the beginning of the third age until the end of the fifth age, where they weave their cocoons takes a time of twenty days on average, and then another seven days to classify cocoons, separate the defective and kneaded, clean excess yarns and leave all cocoons bagged, suitably to be transported to the spinning company. The time of creation from the third age to the time when casula passes only eating the leaves of blackberry, so the producer can not let them go hungry and never let the shed or handling shed to become infected with some kind of pest or pesticide, because the silkworm is very sensitive to any type of disease or use of pesticide directly or indirectly applied.

Table 4. Cost and Total Production Profit (CTP) on raw material for the production of cocoons of silkworm, in nine harvests (CIDADE GAUCHA - PR, 2015/2016).

<table>
<thead>
<tr>
<th>PERIOD</th>
<th>QUANTITY CASES (KG)</th>
<th>TOTAL VALUE ($)</th>
<th>INDIRECT COSTS ($)</th>
<th>DIRECT COSTS ($)</th>
<th>TOTAL MONTH ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAFRA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10/2/15</td>
<td>126.16</td>
<td>2397.04</td>
<td>300.00</td>
<td>212.00</td>
<td>1885.16</td>
</tr>
<tr>
<td>11/2/16</td>
<td>187.19</td>
<td>3556.61</td>
<td>300.00</td>
<td>318.00</td>
<td>2938.61</td>
</tr>
<tr>
<td>07/12/16</td>
<td>268.71</td>
<td>5374.20</td>
<td>300.00</td>
<td>424.00</td>
<td>4650.20</td>
</tr>
<tr>
<td>1/14/16</td>
<td>234.57</td>
<td>4808.68</td>
<td>300.00</td>
<td>371.00</td>
<td>4137.68</td>
</tr>
<tr>
<td>2/22/16</td>
<td>182.02</td>
<td>3668.55</td>
<td>300.00</td>
<td>318.00</td>
<td>3050.55</td>
</tr>
<tr>
<td>22/03/16-04/19/16</td>
<td>226.23</td>
<td>4783.24</td>
<td>300.00</td>
<td>371.00</td>
<td>4112.24</td>
</tr>
<tr>
<td>05/30/16</td>
<td>236.09</td>
<td>4979.13</td>
<td>300.00</td>
<td>371.00</td>
<td>4308.00</td>
</tr>
<tr>
<td>07/08/16</td>
<td>251.34</td>
<td>5072.65</td>
<td>300.00</td>
<td>371.00</td>
<td>4401.65</td>
</tr>
<tr>
<td>TOTAL ACCUMULATED</td>
<td>1975.54</td>
<td>40036.31</td>
<td>2700.00</td>
<td>3180.00</td>
<td>34156.31</td>
</tr>
</tbody>
</table>

FINAL CONSIDERATIONS:

Due to the facts mentioned in this project, sericulture is a way of obtaining a source of family income through work and union between both the rural producer and the spinning company, in this culture like all
the others there are advantages and disadvantages, which will be cited as follows:

1. Disadvantages: A dependent crop, whether in the climate or heat or cold in excess, lack of rainfall and low humidity causes poor breeding, poor disinfection also harms insects causing diseases through viruses such as yellowworms. Old by death rates through infestation of the causative virus in the management shed). Moreover they are insects very sensitive to any type of pesticide and very dependent on the handling of the farmer and the way he treats them to obtain result, all based on obtaining quality silk.

2. Advantages: A rapid financial return culture where its process for each crop lasts around 25 to 29 days, a low investment crop that basically does not harm the environment, occupies a small area of ??cultivation of blackberry because of other crops planted in the region; culture that at the moment is being valued by the fact of being scarce with that its unit price is higher in the last years an increase of about 40% in relation to the last five years.

The sericulture was already a great culture in the northwest region of Paraná, being one of the best silks produced in the country and consequently sold abroad being one of the most sought after Chinese silks, which made this crop decline was the great spread of yellow in the handling huts and other diseases, was also the little incentive of the spinning companies of the time.

Some curiosities to be cited are also that; when eggs are given chemical baths to equal birth and do not form at different ages. After birth they are treated with very soft and already crushed blackberry leaves so as not to hamper their development. Hydrated lime is a great ally for the cleaning and disinfection of the same animals that helps in the disinfection of the handling shed. From the shelter of the larvae in the shed, all responsibility and the producer and their profit obtained at the end of the harvest is through the quality of handling, which results in the quality of their cocoons. To consider a good cocoon has to reach on average 17%, that is, every 01 kilo are 170 grams of pure silk to be sold, and each cocoon in this size produces on average from 1100 to 1600 meters of wire silk. To be shredded, another chemical bathing process is carried out, which leaves the silk less brittle when the chrysalis is removed (pupa stage of the insect) and separated and also destined for food exportation.

Aiming at table 4, which shows the profitability of the harvest and the expenses realized, we can see that the average profit is 85% in relation to the monthly expenses. Therefore based on this case study the sericulture or sericulture is totally viable for the rural producer, aiming at the low consumption, the familiar labor force and the high profitability in the production.

REFERENCES


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