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RESEARCHES CONCERNING THE ORGANIZATION OF A CRAFT MANUFACTORY FOR PROCESSING UNREELING SILK COCOONS

Viorica SLĂDESCU[1], Georgeta DINIȚĂ[2], Claudia MUȘAT[1], Alexandra MATEI[3]

[1]National Art University Bucharest, 19 Budișteanu Constantin g-ral str., District 1, Postal code 010773, Bucharest, Romania, Phone:0745178920, 0728820337, Fax + 40 213125429, E-mail: sladescu.viorica@gmail.com
[2]University of Agricultural Sciences and Veterinary Medicine, Buchare st, 59 Marasti, District 1, 011464, Bucharest, Romania, Phone: +40 21 318 25 64/232, Fax: + 40 21318 28 88, E-mail: georgetadinita@yahoo.com
[3]S.C. Sericarom S.A. București – 69 Bucuresti-Ploiești road, District 1, Bucharest, Phone: 0740398116, E-mail:monicamatei47@yahoo.com

Corresponding author email: sladescu.viorica@gmail.com and sladvio@yahoo.co.uk

Abstract

In the Romanian village the artisanal crafts were always a cultural-artistic and economic activity, which material and spiritual filled in the rural community. The existence of textile raw materials and some of other sources in the sericultural (family) microfarm requires only a correct stimulation of the crafts in the direction of activity development on the basis of economic and aesthetic orientation, of what specialists call Romanian "ethnodesign". The paper aims to present the organization of a craft manufactory for processing the unreeling silk cocoons from wastes of the technological process in the obtaining the reproduction biologic material, Bombyx mori L. Species. Such a technological model has been omologated and it works in the sericultural microfarm of Niculescu family from Stoenesti – Valcea. Its completion assumed the selection of some ways of processing the textile raw materials into fabrics and handicraft objects under conditions of simple technologies, as well as the documentary study on a minimum machinery inventory for a textile manufactory, structural, technological and economic adapted and integrated in the management of the reproduction sericultural microfarm. The activities carried out in the frame of craft manufactory are based on textile techniques and technologies of processing, dyeing, weaving, wickerwork, sewing, node making and finishing the raw materials from wastes and the sericultural by-products. By processing the textile material in the craft manufactory, the researchers have established a flow based on two technologies and six techniques of treatment, by which three types of yarns were obtained (by hand-made reeling) with 15 chromatic variants. By using the obtained yarns three prototypes of "basse-lisse" weavings have been created (thin fabrics type designed for spring-summer garments). Following the applicative researches carried out in the laboratories of National University of Arts Bucharest, for the craft manufactory two technologies and six techniques of textile material processing have been selected. Four types of yarn (by hand-made reeling) in 24 chromatic variants have been achieved. There have been elaborated the technological processes of three weaving prototypes, "basse-lisse" texture having the technical parameters in the category of thin abrics designed for spring-summer garments.

Key words**:** *craft manufactory, silk yarn, unreeling silk cocoons, loom*

INTRODUCTION

In Romania the rural civilization preserved an ancient traditional culture in which the sericulture gradually was inserted starting from the XIVth century, representing a well developed activity in the economy of the peasant household and connected with the other regional or local activities (agriculture, fruit growing, livestock breeding, fishing, raising honey bees). The geographic location in the continental-temperate zone and the pedoclimatic conditions promoted the mulberry cultivation, a tree which today is large spread from the plains area, podiums, till the slopes of the high subcarpathian hills. The village creation of material and cultural assets by practicing different textile crafts has been boosted by the changes in the Romanian society starting from the end of the XIXth century, along with the foundation of the modern European state, Romania.

A particular interest is manifesting in the last years in the majority of sericultural countries

for the recovery of wastes and sericultural by-products (unreeling cocoons, wastes from cocoon reeling, chrysalis) reflected in the scientific research [1], [2], [3], [4], [5], and [9].
The paper aims to present the organization of a craft manufactory for processing the unreeling silk cocoons from wastes of the technological process in the obtaining the reproduction biologic material, Bombyx mori L. Species [8].

MATERIAL AND METHOD

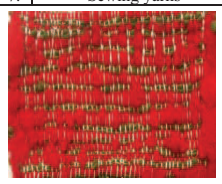
The principles which formed the basis for the organization of the pilot textile craft manufactory were: technological simplicity, coherency in the tradition continuing, accessibility in the learning of operating specific tools and machines, originality and variety of aesthetic solutions, compatibility with the core utility destination, commercial attractivity characteristic of the ecologic and hand-made textile production.
The determinants factors in the choice, positioning and flow of the textile process are:
a. The space organized in a minimum perimeter, multifunction fitted and equipped with utilities (electricity, current water, access to endowments).
b. Mechanical and manual technologies easily reproducible.
c. Simple machines with multiple possibilities of operating and positioning in certain processes of production and storage during breaks.
The labour initial composed the members of the farmers' family with minimum knowledge of "hand work".
The production composed of two textile technologies: manual reeling and weaving in multiple variants, following prototypes technical and aesthetical balanced, with different utilities and easily reproducible. The prototypes experimented and implemented in production have possibilities of creative evolution in the future.
The raw material on which is based the craft textile production is represented by the unreeling silk cocoons and different types of silk yarns.

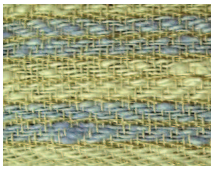
RESULTS AND DISCUSSIONS

Utilising the two core textile technologies in the craft manufactory there are accomplished mainly silk yarns and fabrics from natural silk or from mixtures of yarns specific to the ethnogeographic zone in which the microfarm is located.
In accordance with the number of yarns which doubles and with the torsion degree, more types of silk yarns result, with specific names and different uses in fabric structure.

Table 1. Different types of silk yarns obtained in the sericultural micro-farm

No	Commercial name	No.of doubled yarns	Cocoon no.for one yarn	Simple yarns torsion - twistings/m	Twisted yarns torsion – twistings/m	Yarns' destination
1.	"Organzin"	2-3	3-8 reeling	About 700	About 600	Warp fabrics
2.	"Grenadin"	2-3	3-12 reeling	About 700	About 1400	Warp fabrics
3.	"Trama"	2-4	3-12 reeling	About 700	8-120	Weft fabrics
4.	"Crepe"	6-8	3-12 mixture	About 700	800-3200	Crepe fabrics
5.	Yarns for knitwear	2-3	3-12 reeling	` About 500	About 400	Knitwear
6.	"Marabaut"	2-3	3-12 unreeling	8-120	1000-2000	Weft fabrics
7.	Sewing yarns	In accordance with the needs of creating textile assembly creation, mechanic or manual				Sewing yarns






The yarns obtained by spinning in the textile craft from unreeling cocoons are found in Table at positions 3, 4 and 6 and they presented a part of the raw material used in weaving [11]. The ornamental weavings and fabrics are made in the same types of horizontal (basse-lisse) and vertical (haute-lisse) looms, but the raw material, the warp preparation and the material quality, which requires compliance with the standards for utility and aesthetic products, are different. The weaving method is the most simple: weaving in two or four yarns. The 15 chromatic variants of silk and the 52 weaving prototypes for clothing represented two qualities: one thick for the autumn-winter season and another thin for the spring-summer season, in different drawings and chromatic variants [5].

All the processes and technological operations mentioned in table 2 were performed in the technological flow of the craft from the sericultural micro-farm [10].

A. Primary operations – preparation techniques as follows: dry cleaning of impurities and powder, sorting, sizing after type, cutting for easier processing, wet cleaning, washing, gradually boil-off (variable being the time, temperature and concentration % of basic solution of calcined soda), centrifuge, dyeing in different conditions (dry form, boiled-off in different stages, fleece, yarn, finished fabric, finished textile products), preparation for twisting (fluffing, teasing - shredding), preparation for continuing the technological process (reeling).

B. Secondary operations – technologies of product forming (yarn obtaining by spinning with fork and spindle), obtaining the yarn combination (twisting), flow vertical loom (warping spotted, looming with yarns, weaving itself), flow horizontal loom (warping spotted, loomed, pulled back, weaving itself), manual knitting with knitting, finishing rough fabric (mechanical, thermic, chemical, tailoring on shape, assemblying by manual sewing or with the sewing machine), guided trimming (cutting, snipping, unravelling, steaming, ironing on mold), assembling component parts and accessories by sewing, lamination, putting on wire, wickerwork, binding, node making.

C. Finishing operations – in order to give a commercial shape and presentation (surface chemical and thermic treatments, doubling, packing and storing).

Table 2. Endowments and machines of the textile craft manufactory for silk cocoons processing

No.	Textile technology	Machine or endowment name	No. c pieces	Technical characteristics	Position in craft
1.	Weaving	Horizontal (basse-lisse) loom	1	Manual machine weaving in 2 and yarns Maximum width 90cn Maximum length 2500cm.	Fixed positioning Work surface 3m^2
2.		Vertical (haute-lisse) loom	1	Manual machine thick weaving in 2 yarn Maximum width 100cn Maximum length 200cm.	Folding Mobil Work surface 1.5m^2
3.		Accessories for basse-lisse loom	different	Metalic yarns/ Metalic reed 2 piece Shuttles 2 pieces	Folding Mobil Storable
4.	Preparation	Vertical warping	1	Support to stretch the warp at comple fabrics till 24 yarn Size 150cm./200cm.	Folding Mobil Work surface 1.5m^2
5.	Weaving	Coil supports	1	Support for coils yarn warp max. 2 yarns	Multifunctional Storable Mobile
6.		Coiling shuttle	1	Manual equipment / Yarns preparation	Storable Mobile
7.		Reeling device / Manual reeling	1	Manual tool	Storable
7.	Reeling/	Fork	1	Reeling support	Storable Mobile
8.	Spinning	Spindle	2	Yarn twisting	Storable
9.		Electrical sewing machine	1	Sewing, scalloping, quilting, embroidery	Storable Mobile
10.	Finishing	Steaming iron	1	Finishing the fabric surface	Storable
11.		Ironing table	1	Ironing support	Storable Mobile
12.		Automatic washing machine	1	Attenuation, washing, centrifuge dyeing	Fixed positionin water/sewer source
13.	Treatments	Electrical dryer	1	Drying with jet of cold and hot air	Storable Mobile
14.	Dyeings	Drying support	1	Treatments	Storable Mobile
15.		Hose withdifferent feetings	25ml.	Treatments	Storable Mobile
16.		Stainless steel containers/ warn treatments	6	Dyeings and treatments	Storable
17.		Plastics containers / cold treatments	3	Treatments	Storable

Table 3. The evaluation of income from processing 100 kg unreeling silk cocoons

No.	Name of product from unreeling silk cocoons	Raw material weight per product	Number of products realized from 100 kg cocoons	Unit price	Production value at 100 kg cocoons
1.	Silk yarns of different colours – "shantung" type	113g/100g yarns	88.50 kg yarns	33.50 lei/100g 335 lei/1kg	29 647.50 lei
2.	Thick fabric type cloth – autumn/winter season	321.37 g./ml.	311 ml	135.51 lei/ml	42 143.61 lei
3.	Thin fabric type cloth – spring/summer season	295.66 g./ml.	338.22 ml	127.78 lei/ml.	43 217.75 lei

The most important for the craft technological flow are the achievement of the effective treatments for silk cocoons and the classic techniques of reeling and weaving as basis of the craft manufactory textile production. During 2007-2008 the experimental textile craft from the sericultural micro-farm processed reeling and unreeling cocoons from the own production under the coordination of the specialists which have worked at the research project CEEX 40/2005 [6], [7]. Today they continue freelance this activity recoverying in the Romanian market the ecologic and hand-made textile products from natural silk.

CONCLUSIONS

Such a craft manufactory of processing the unreeling silk cocoons has been approved and it works in the sericultural micro-farm of the Niculescu family from Stoenesti, Valcea district. Its achievement assumed the selection of some methods of processing the textile raw materials in fabrics and craft objects under the conditions of some simple technologies, as well as the documentary study on a minimum machine inventory for a textile manufactory, structural, technological and economical adapted and integrated into the management of reproductive sericultural micro-farm. The production with simple work methods of a wide range of yarns and fabrics. The economical optimization of the silkworm rearing micro-farm, by using the unreeling silk cocoons.

The supplement of the seasonal activity from the silkworm rearing field with an economic activity which increase the economic profitability of farm and provide a secondary activity during the cold season. The continuing of manufactory tradition and of cultural specificity, in the rural area.

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REFERENCES

[1] Grekov, D and Tzenov, P., 2005, *Present situation and strategies for revival and promotion of sericultural industries and small enterprise development in Bulgaria*. BACSA, Tashkent, p.87.

[2] Kang Sun Ryn, Heui Sam Lee, Iksoo Kim, Mee Young Ahn and Jin Won Kim, 2002. *Clinical experiment and recent research trend on the powdery silkworm*, XIX-th Congress of The International Sericultural Commission Proceedings, Thailand, p.248

[3] Zi Ran Huang, 2002. *Utilization of sericultural resources in China*. XIX-th Congress of The International Sericultural Commission Proceedings, Thailand, p. 449

[4] Matei A.,Popescu A.,Sladescu V.,Talpes M.,Dan M., 2006. *Integrated production and durable management of a reproduction sericultural family farm.* The 35th International session of scientific communications the scientific papers of the Faculti of animal science, Bucharest.ISBN973-89o5-09-5

[5] Matei A.,Popescu A.,Sladescu V., 2008. *Researches concerning the unreeable cocoons processing in handicrafts-a way to increase profitability in sericicultural farms* .U.S.A.M.V. Bucharest-Prospects of agiculture and rural areas development. ISSN 1844-5640.p.254.

[6] Popescu, A, Matei, A., Sladescu V., 2008. *Market study concerning the processing of unreeling silk cocoons into handicrafts*. Buletin UASVM- Horticulture 65 (2)/ 2008, ISSN 1843- 5254, ISSN 1843- 5394, p.465

[7] Popescu, A., Matei A.,Sladescu, V, Androne, M., 2007. *The economic impact of the handicraft processing of the unspinning cocoons in the family reproduction*

sericicultural integratrd farm. .The 36th International session of scientific communications the scientific papers of the Faculty of Animal Science, Bucharest.ISBN978-973-8905-22-1,p.285.

[8] Sladescu, V., Matei, A., Muşat, C., Popescu, A., 2008, *Silk art and craft opportunities for achieving a durable management of a sericulture reproduction farm*. Volume of The First International Conference „Sericulture from tradition to modern biotechnology"- Seristech 2008. ISBN 978- 973- 744- 109-6, p.83- 89

[9] Vetu, Roxana. 2003. *Unelte, maşini şi instalaşii textile şi de pielărie,* Catalog Muzeul Naţional al Agriculturii, Editura STOR Slobozia 2003

[10]Slădescu Viorica. 2008. *Biotehnologii, ethnodesign, ecoart SILK*, Editura UNARTE, Bucureşti, ISBN 978-973-1922 40-9, pag. 69,70, 84.