

# Technical specifications for organic sericulture presented to the Italian Ministry of Agricultural, Food and Forestry Policies

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## **Organic farming is regulated by the Council Regulation (EC) No. 834/2007**

**The regulation set a new course to develop organic farming further, with the following aims:**

- sustainable cultivation systems**
- a variety of high-quality products.**
- greater emphasis on environmental protection**
- more attention to biodiversity**
- higher standards of animal protection**
- consumer confidence**
- protecting consumer interests**



**Organic production respects natural systems and cycles. Biological and mechanical production processes and land-related production should be used to achieve sustainability, without having recourse to genetically modified organisms (GMOs).**

**In organic farming, closed cycles using internal resources and inputs are preferred to open cycles based on external resources. If the latter are used, they should be:**

- organic materials from other organic farms**
- natural substances**
- materials obtained naturally, or**
- mineral fertilisers with low solubility.**



Exceptionally, however, synthetic resources and inputs may be permissible if there are no suitable alternatives. Such products, which must be scrutinised by the Commission and EU countries before authorisation, are listed in the annexes to the implementing regulation (**Commission Regulation (EC) No. 889/2008**).

# Global Organic Textiles Standard (GOTS)

Technical regulation for organic textile certification, supported at international level by some of the main organizations which promote organic farming around the world:

Organic Trade Association, IVN, Japanese Organic Cotton Association, Soil Association.

The whole supply chain from field through manufacture to final product must be certified.

A textile product maybe defined as Certified Organic when:

a) it is made with natural fibres that are produced and certified as organic by an independent certification body in accordance with the requirements laid down in the reference laws i.e.: Regulation (EEC) No 834/2007 and Regulation (EEC) No 889/2008, in Europe; the National Organic Program (NOP), in force in the USA; the National Programme for Organic Production (NPOP) in force in India

b) it has been manufactured in compliance with the environmental and social requirements of the Global Organic Textile Standard (GOTS)

# IMPORT FROM ABROAD

Organic products from non-EU countries can be distributed on the EU market only if produced and inspected under conditions that are identical or equivalent to those applying to EU organic producers.

The rules introduced by the 2007 regulation are more flexible than the previous set-up, under which organic goods could be imported from outside the EU only if they were EU-certified, their production was monitored by the EU countries and an import licence had been issued.

The import licence procedure has been replaced by new import rules. Control bodies (Certifying organisations) or CBs operating in non-EU countries are now directly authorised and monitored by the European Commission and EU countries.

This allows the EU Commission to supervise and monitor the import of organic products and the checks carried out on organic guarantees.

# GROWTH OF ORGANIC TEXTILES MARKET

The growth of GOTS, organic and sustainable, certified facilities in 2013 in Europe grew in Germany by +66%, Austria +14%, Switzerland +27%, Portugal +73%, Italy +13% and France +12% (GOTS Annual Report 2013)

(<http://sightmode.com/the-demand-for-organic-fashion-is-growing/>).

Tab 1: Italian Silk Companies certified by ICEA for organic silk production

<b>Company name</b>	<b>Location</b>	<b>Web-site</b>	<b>Certification</b>	<b>Products</b>
Ongetta	Ponte di Piave (TV) Venetian region	<a href="http://www.ongetta.it">www.ongetta.it</a>	GOTS 2013-16	Silk yarns
Tessiture seriche di Olmeda SpA	Grandate (CO), Lombardy (Italy)	<a href="http://www.teseo.como.it">www.teseo.como.it</a>	GOTS 2014-01	Woven fabrics
CEL Srl Unipersonale	Cernobbio (CO), Lombardy (Italy)	<a href="http://www.cel-srl.it">www.cel-srl.it</a>	GOTS 2014-13	Finished Fabrics
Se.Le.Ma. Srl	Colverde (CO), Lombardy (Italy)	<a href="http://www.selema.eu">www.selema.eu</a>	GOTS 2014-14	Woven fabrics
Fratelli Vitali Spa	Calco (LC), Lombardy (Italy)	<a href="http://www.vitalitessitura.it">www.vitalitessitura.it</a>	GOTS 2014-22	Woven fabrics
Taroni S.p.A	Grandate (CO), Lombardy (Italy)	<a href="http://www.taroni.it/">www.taroni.it/</a>	GOTS 2015-004	Woven fabrics



The first methodological problem was to identify what is possible to certify as agricultural production, because agricultural production does not regard textiles.

Therefore, we identify the "Council Regulation (EEC) No 2658/87 of 23 July 1987 on the tariff and statistical nomenclature and on the common custom tariff" as the legal basis to enclose silkworms among live animals allowed in the agricultural productions.

CN code	Description	Rate of duty		Supplementary unit
		autonomous (%) or levy (AGR)	conventional (%)	
1	2	3	4	5
<b>0105</b>	<b>Live poultry, that is to say, fowls of the species Gallus domesticus, ducks, geese, turkeys and guinea fowls :</b>			
	– Weighing not more than 185 g :			
<b>0105 11 00</b>	– – Fowls of the species Gallus domesticus . . . . .	12 (AGR)	—	p/st
<b>0105 19</b>	– – Other :			
<b>0105 19 10</b>	– – – Geese and turkeys . . . . .	12 (AGR)	—	p/st
<b>0105 19 90</b>	– – – Ducks and guinea fowls . . . . .	12 (AGR)	—	p/st
	– Other :			
<b>0105 91 00</b>	– – Fowls of the species Gallus domesticus . . . . .	12 (AGR)	—	p/st
<b>0105 99</b>	– – Other :			
<b>0105 99 10</b>	– – – Ducks . . . . .	12 (AGR)	—	p/st
<b>0105 99 20</b>	– – – Geese . . . . .	12 (AGR)	—	p/st
<b>0105 99 30</b>	– – – Turkeys . . . . .	12 (AGR)	—	p/st
<b>0105 99 50</b>	– – – Guinea fowls . . . . .	12 (AGR)	—	p/st
<b>0106 00</b>	<b>Other live animals :</b>			
<b>0106 00 10</b>	– Domestic rabbits . . . . .	10	6	—
<b>0106 00 20</b>	– Pigeons . . . . .	12	10	—
	– Other :			
<b>0106 00 91</b>	– – Primarily for human consumption . . . . .	Free	Free	—
<b>0106 00 99</b>	– – Other . . . . .	Free	Free	—



With regard to moriculture, in the standard any pesticide, fungicide, fertilizer... or other chemical to add in the field are identified, since the active ingredients permitted in organic farming for tree crops are already defined in the Council Regulation (EC) No. 834/2007.



# The origin of silkworm eggs

On the other hand, we were obliged to define the origin of the silkworm eggs, which should be obtained by a certified egg production plant. Currently, CRA-API required to undergo the certification process, so that it can be recognized as the first egg production site in Europe certified to produce organic silkworm boxes



# Artificial diet

- Another interesting point concerning silkworm feeding was that artificial diet was inserted in the organic cocoon production, because all the ingredients necessary to produce the leaf substitute are enclosed in the Annexes to the Regulation (EEC) No 889/2008. We specified only few additives (see the standard, page 5) which are not enclosed in the additives for animal feeding, but which are however enclosed as technological additives for human food.



# Disinfection

- It is important to underline that we specified that it is not possible to treat silkworm larvae during the cycle with any chemical (especially antibiotics and formalin), with the exception of lime.
- Furthermore, particular attention was devoted also to the use of disinfectants between one larval cycle and the following. We banned the use of formalin, which is particularly dangerous for the man and the environment, and persistent in the rearing room. In fact, CRA-API has tested other alternative ways of disinfecting eggs and rearing rooms in the last years, and there are other possible safer chemicals to use, which are enclosed in the Annexes to Regulation (EEC) No 889/2008.





**The standard for organic sericulture was issued on 14th March 2015 by Italian MIPAAF.**

# STANDARD FOR ORGANIC MORICULTURE AND SERICULTURE

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## 1 Introductory notes

"Silkworms" as "live agricultural or unprocessed products" enclosed in the Section 1 "Live animals; animals products", Chapter 1 "Live Animals", Code NC 0106 49 00 "Other Live Animals – Insects – Others" of the European common tariff nomenclature, about which in Annex I of Council Regulation (EC) 2658/1987 regarding tariff and statistical nomenclature and common Customs tariff, last amended by Commission implementing Reg. No 1101/2014, are products enclosed in organic production according to Reg. (CE) No 834/2007.

## 2 Definitions

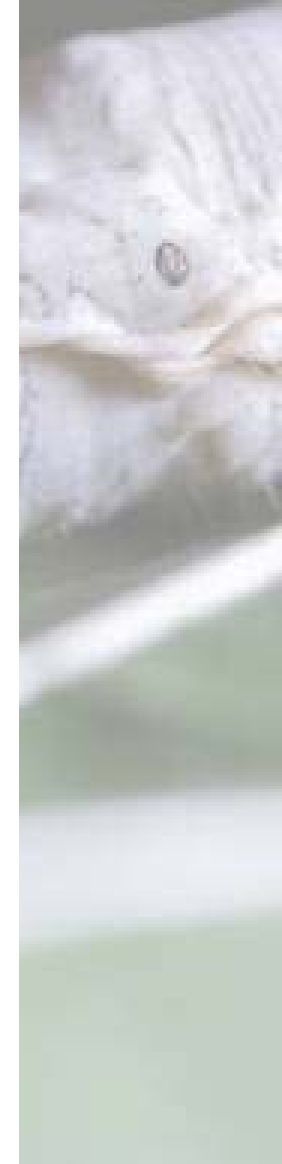
"*Silkworm*" – larva of the moth of the species *Bombyx mori* belonging to the family *Bombycidae*.

"*Polyhybrid*" – Silkworm originated by the cross of 4 parental lines and devoted to the cocoon production for commercial aims.

"*Silkworm eggs*" - eggs from which first instar larvae hatch.

"*Fresh cocoons with live pupa*" – cocoons from which the moths can emerge, as the pupae have not undergone drying process.

"*Silkworm egg box*" – international measurement unit of the silkworm eggs, usually consisting in small boxes with a wooden framework, covered with cotton lint and containing, per each box, 20.000 eggs ready for hatching. The measurement unit is the reference to establish the welfare condition and density of the silkworm larvae.





### 3 Scope and field of application

Except what foreseen by applicable laws and regulation on organic agriculture, the current standard disciplines the silkworm rearing activity, in conformity with what is foreseen by the art. 42, second paragraph of the Council Reg. (EC) No 834/2007.

The certification applies to the whole rearing process and the "fresh cocoon with live pupa" and "silkworm eggs" represent the certifiable products.

### 4 Moriculture

Mulberry trees shall be cultivated in conformity to the requirements Regulation (EC) No 834/2007 and Regulation (EC) No 889/2008.

For fertilization and amendment of soil of the mulberry fields, farmers are suggested to use the crop and silkworm rearing residues, through apt practices of shredding, composting, and burying.

### 5 Silkworm rearing

#### ■ Origin of insects

Use of silkworm eggs laid by strains acclimated in the environment where they are reared is preferred.

Silkworm eggs shall be obtained laid by mother moths reared with the organic method.

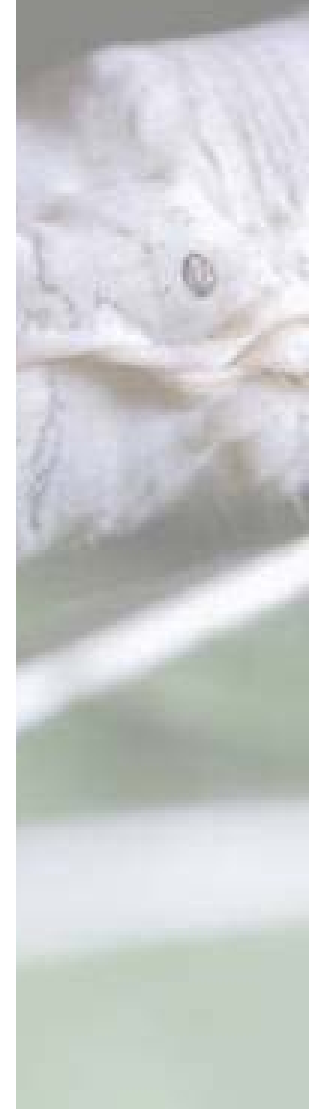
#### ■ Silkworm egg production

*Pure line or parental line silkworm egg production:* silkworm eggs are laid by mother moths belonging to pure lines maintained in the germplasm banks<sup>1</sup> and here reproduced. In these centres, at every rearing season, parental lines are constituted from the pure lines, to produce polyhybrid silkworm eggs.

*Polyhybrid egg production:* polyhybrid eggs are laid by mother moths crossed among them and belonging to different parental lines, with inbred rearing in the germplasm banks or given to specialized farmers<sup>2</sup> by the germplasm banks themselves for multiplication at a larger scale.

<sup>1</sup> In Italy this activity is carried out by CRA-API Honey bee and Silkworm Research Unit

<sup>2</sup> These farmers, after parental lines rearing, return the fresh cocoons to germplasm banks or egg production plants, so that crossing among moths can be performed in order to produce polyhybrid silkworm eggs. The same eggs are packed as silkworm egg boxes to distribute to silkworm rearers to produce commercial polyhybrid cocoons from which silk is obtained.



Mother moths must be certified for the absence of hereditary diseases. We consider pebrine (*Nosema bombycis*) as the only hereditary disease until new scientific evidences are found.

With the aim of avoiding microbiological contamination of the egg shell surface, eggs can be disinfected by using all the products enlisted in the Annex VII of the Reg. (EC) No 889/2008, with the exclusion of formaldehyde.

Silkworm eggs ready to be distributed are packaged in silkworm boxes containing about 20.000 silkworm eggs of the approximate weight of 11-12 g

### Facilities

#### 5.3.1 Silkworm egg incubation facilities

Silkworm egg incubation must be carried out under apt conditions of temperature, humidity and photoperiod (according to the kind of reared silkworm hybrid), and in devoted facilities, separated by the rearing rooms of the following larval instars.

Incubation rooms should guarantee the complete control of temperature and humidity, and a good ventilation to remove damaging gases. Furthermore, they should be easy to disinfect.

#### 5.3.2 Rearing facilities

Rearing rooms must be controlled for environmental temperature and humidity, and ventilated for air exchange.

Rearing of the first three instars and of the last two instars should be carried out in separate rooms. Nevertheless, in case of silkworm rearsers who carry out one rearing cycle per year only, it is possible to perform all the larval instars in the same room provided that larvae of different instars are not in the same room at the same moment. Moreover, subsequent rearing cycles must not be carried out without respecting the interval for sanitary break of at least 3 days including disinfection period.

Tab. 1 - Rearing surface of about 20.000 larvae

Larval instars	Surface occupied at the end of each instar (sqm)
1st instar	0.4-0.8
2nd instar	1.0-1.8
3rd instar	2.0-3.6
4th instar	4.0-10
5th instar	15-20



The farmer, according to the art. 66 of the Reg. (EC) No 889/2008, shall keep a stock account with records about dates of beginning of rearing and duration of each larval instar, in addition to moult dates.

### Management of fourth and fifth instar rearing

#### 5.4.1 Rearing methods

The following rearing methods are allowed:

- a) shelf-rearing;
- b) rearing on the floor or shoot rearing
- c) mechanised rearing

### Silkworm health and welfare

With the aim to avoid disease spreading, silkworm larvae must be reared, according to the used rearing method, in the respect of the density indicated in Tab. 1.

A particular care of the density limit shall be taken during the fifth instar.

### Silkworm feeding

Raw materials and feeds used for silkworm nourishment must be conform to criteria laid down in the Reg. (EC) No 834/2007 and Reg. (EC) No 889/2008 on the organic production.

It is allowed the use of:

- a) mulberry mature and fresh leaves harvested from organic mulberry fields;
- b) feeds containing organic mulberry leaf and other organic raw materials (like, for example, soybean and cereal meals);
- c) all the additives employed in the animal feeding and reported in the Reg. (EC) No 889/2008, Annex VI, including all the vitamins and pro-vitamins, about which it is specified at point 3a) of the quoted Annex.
- d) in addition to the additives for feeds employed in the animal feeding about which it is specified at point b), the use of the following jelling agents, enclosed in the Reg. (EC) No 889/2008, Annex VIII, is authorized
  - i) agar agar,
  - ii) carragenin
  - iii) potassium alginate



The use of antibiotics in silkworm feeding is prohibited.

## **Prophylaxis and veterinary treatments**

### **5.7.1 Prophylaxis**

With the aim of avoiding crossed contaminations and multiplication of pathogens, rearing and leaf storage facilities, machineries and instruments must be duly cleaned and disinfected.

Products listed in Annex VII of Reg. (EC) No 889/2008, with the exclusion of formaldehyde, can be used for cleaning and disinfection.

In order to inhibit multiplication of bacteria and fungi, distribution of lime on leaves during the larval moulting is allowed.

### **5.7.2 Veterinary treatments**

Veterinary treatments are generally prohibited, due to the fact that, considering the short larval cycle, they are not effective to assure cocoon production. On the other hand, it is mandatory to respect the interval for the sanitary break between one cycle and the following one and the material possibly infected must be composted at high temperature or burnt in the farm or buried.

If veterinary treatments are strictly necessary, the product obtained from rearing fails to be qualified as organic, for the whole biological cycle during which the veterinary treatments have been applied.

## **6 Labelling**

In the labelling and advertising of certified product may be used only, in addition to what foreseen by applicable laws, declarations complying with the requirements laid down in Reg. (EC) No 834/2007 and Reg. (EC) No 889/2008.

# CONCLUSIONS

Sericulture has always been an almost organic crop, at least in temperate countries, where environmental and non-intensive farming conditions permitted to limit the fertilization amount, to use mechanical control of weeds, to employ milder chemical products or mechanical control of the mulberry insect pests

The very quickly larval cycle of the silkworm does not encourage the use of chemicals to control diseases, while the focus is on the rearing hygiene and accurate disinfection of tools and rearing rooms.

For this reason, ICEA regards as possible to accelerate the conversion procedures for traditional mulberry crops so that they can be certified as organic in a very short time in Europe.



**Thank you for your  
attention**