

Sericulture status, problems, issues and development strategies in Greece

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Sericultural activities represent a long tradition in Greece and raw cocoon production and silk processing had been familiar activities of all the Greek territory since very early periods.

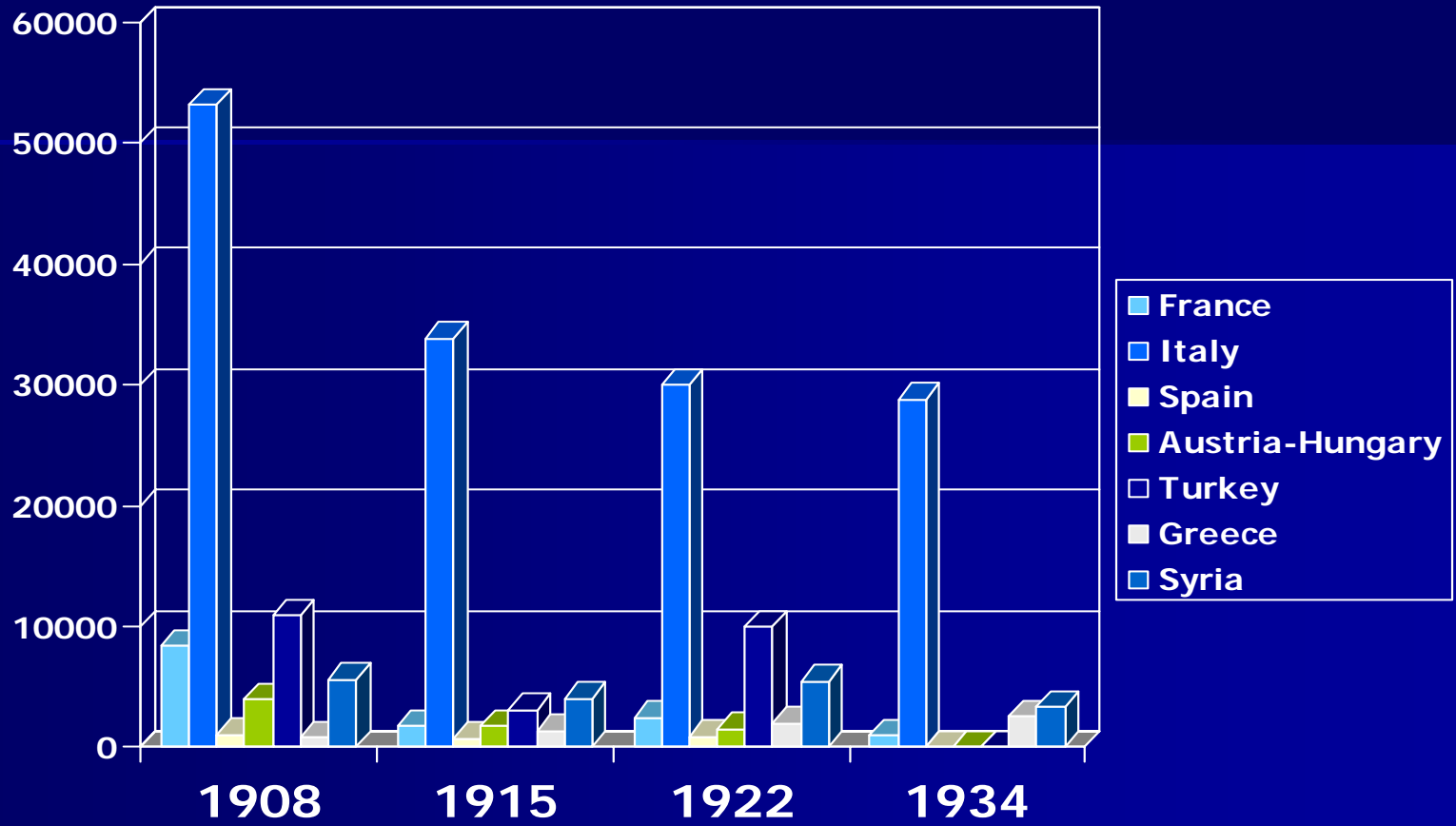


Production and processing reaches high levels in the country up to 1938, highly affected by the silkworm's pembrine disease appearance in France, gaining a remarkable share among the Mediterranean countries.

| Fresh cocoon production in the Mediterranean basin, 1896-1934. (Tons) | | | | | | | | |
|---|--------|--------|--------|--------|--------|--------|--------|--------|
| Country | Year | | | | | | | |
| | 1896 | 1904 | 1908 | 1912 | 1915 | 1922 | 1931 | 1934 |
| France | 9.318 | 3.889 | 8.409 | 6.234 | 1.727 | 2.500 | 966 | 970 |
| Italy | 41.182 | 56.641 | 53.193 | 47.470 | 33.897 | 30.000 | 34.458 | 28.839 |
| Spain | 1.231 | 993 | 1.105 | 1.30 | 735 | 900 | --- | --- |
| Austria – Hungary | 3.599 | 3.756 | 3.953 | 3.482 | 1.730 | 1.500 | --- | --- |
| Turkey | 3.572 | 9.203 | 10.951 | 8.588 | 3.130 | 10.000 | -- | --- |
| Greece | 180 | 808 | 840 | 635 | 1.347 | 2.029 | 1.690 | 2.569 |
| Syria | 4.860 | 5.119 | 5.641 | 4.660 | 4.050 | 5.500 | 2.815 | 3.310 |

Sources: F.O. Diplomatic and consular reports, L'économiste Francais, L'economista, Economical reports of Greece.

Tons fresh cocoons



**Dry cocoon production, consumption, exports, imports in
Greece for the period 1920-1938, (tons)**

| Year | Dry cocoon production | Dry cocoon consumption by the industry | Dry cocoon exports | Dry cocoon imports |
|-------------|--------------------------|--|-----------------------|-----------------------|
| 1921 | 460,9 | 140,0 | 282,3 | --- |
| 1925 | 1.056,0 | 350,0 | 573,9 | 1,2 |
| 1930 | 628,0 | 700,0 | 86,7 | 104,2 |
| 1935 | 910,0 | 1.040,0 | --- | 153,5 |
| 1938 | 1.149,2 | 1.000,0 | 30,8 | 2,6 |

Sources: Statistics of the Greek commerce, National Statistics Secretariat of Greece

For the same period, as a reflection to the international sericultural circumstances, silkworm egg production develops in Greece, reaching 140.000 boxes (25 gr) yearly up to 1935, the biggest part of them exported, mainly to Persia and Syria.

Silkworm egg production, exports, imports in Greece
for the period 1920-1938 (25 gr boxes)

| Year | National production | Exports | Imports |
|------|---------------------|---------|---------|
| 1921 | 53.041 | --- | 12.124 |
| 1925 | 288.824 | 79.067 | 18.605 |
| 1930 | 149.679 | 86.477 | 6.560 |
| 1935 | 140.142 | --- | --- |

Sources: Statistics of the Greek commerce, National Statistics Secretariat of Greece.

The above described situation lasted nearly up to 1940, followed after that by a dramatic decreasing caused by a combination of facts and coincidences as:

- **The Second World War and its dramatic socioeconomic effects.**
- **The Greek civil war, right after the Second World War, and its dramatic effects to the Greek economy and social construction.**
- **The development and dominance of low price synthetic fibers in the international market.**
- **The rapid growth of the heavy industry and the follow up urbanization.**
- **The gain of new crops, especially industrial ones, like cotton, sugar beet, maize and others, providing high mechanization and income.**



As a result of the previously described situation all the well organized mulberry fields were gradually disappeared up to 1970 and the few maintained sericultural activities relied upon the numerous scattered mulberry trees existing all over the country.

Sericulture reached almost zero point !!!!



**Current issues in sericultural industries and silk enterprise
development**

A brief Introduction

**In the last two decades a regain tendency of
sericulture has been observed in Greece,
deriving through some coincidences.**

The main coincidences which affected the observed regain tendency of sericulture in Greece are summarized below

- Greece became a full member of European Union (EU) and silkworm rearing activity within its Common Agricultural Policy, had been considered for some member countries, such as Greece, as one of the protected and promoted agro-industry components, being subsidized by around Euro 132 per box of 20.000 eggs reared.
- E.U. Common Agricultural policy also subsidized the replacement of traditional annual crops by perennial ones, like trees, including mulberry.
- As a result of that some part of traditional annual crops, mainly industrial ones, like cotton, sugar beet, tobacco, maize, etc, has been replaced by mulberry, giving a stimulus for silkworm rearing.
- The above two subsidies for some period provided a combined support for silkworm rearing, which actually stimulated the interest of some farmers and resulted to an increasing number of farmers involved and magnitude of rearing.

Main coincidences which affected the observed regain tendency of sericulture in Greece.

- Silk reeling and processing industry could also be subsidized through national development programs, This fact actually caused the initiation of some silk industry development efforts in Greece, including the development of a cocoon reeling plant in Northern Greece, which appeared as very much promising for the involved in sericulture people.
- The high industrialisation and rapid development of some traditionally silk producing countries, like China, India and Korea, directed many farmers to industry and accordingly decreased the raw cocoon production, increasing simultaneously the demand of such countries for raw silk.
- For a quite long period has been observed in the E.U. an increasing demand for natural and biological products. The silk products consumption steadily increased and for the same period also remarkably increased in Greece.
- Sericulture recently had started being practiced also for the production of different than the traditional, high added value bio-products, like pharmaceuticals, cosmetics and other biological substances, a fact creating more opportunities for its future.

In addition to the previously described factors, there can be distinguished some more specific advantages for sericultural development in Greece, like:

- **Silkworm rearing, is restricted, due to its climatic and environmental demands, only in the south temperate part of Europe**
- **From this point of view Greece can be considered as one of the most suitable for rearing European regions, gaining from the advantage of EU subsidies for Sericulture.**
- **There exists in the country a large proportion of marginal land, not suitable for intensive crops, but sufficiently suitable for mulberry cultivation.**
- **In many areas of the country, especially in the tobacco producing ones, exist farming families with surplus of family labour capacity.**
- **Due to the high tourism share in the country's economy, there are opportunities for the development of various silk product production and distribution centres, creating employment and additional income.**
- **All new E.U. members from Balkan countries due to their geographic position could develop such centres, creating links and business between them, to the benefit of sericulture and economy.**

Within these frames it appeared that sericulture could re-gain some of the lost ground and ensure a reasonable income through it. Simultaneously there could also be provided to the silk processing industry satisfactory raw material under reasonable prices.

- The above facts for some period created an increasing interest among the Greek farmers and this interest was steadily increasing up to year 2005 as:
- Number of farmers involved
- Silkworm egg boxes reared
- Fresh cocoons produced
- The most important point being the beginning of invested modern technology



This increasing tendency lasted up to year 2005 and there after remained unchanged or even decreased, especially in number of farmers involved.

Various reasons, national and international, lead to these changes, the most important among them being the next:

- **The outbreak of the economic crisis in Greece and other E.U. countries created an environment not suitable at all for business expanding.**
- **The dramatic energy cost increase of the last few years affected negatively the silkworm farmers, especially the modern ones, which invest a lot of energy in their rearing facilities, for heating, cooling, ventilation and cocoon cooking and drying.**
- **The difficulties in bank financing for investment and business expansion.**
- **The uncertainty for the oncoming changes in the E.U. Common Agricultural Policy, reflecting to the possible loss of existing subsidies for certain crops, which might include sericulture as well.**
- **The decreasing demand for luxury products due to the outbreak of the economic crisis also reflected negatively on sericulture.**
- **The dramatic changes in the E.U. textile industry, which was heavily affected in all E.U. countries and almost disappeared from some ones, like Greece. The situation reflects to all of E.U. more or less, where most of the industry stopped operating or moved to other counties with more favourable conditions.**

Especially for Greece there existed some more specific factors which affected negatively sericulture's development.

- The small number of farmers involved in sericulture and their scattered locations does not permit them to get organised in effective cooperatives, putting some pressure onto the political decisions for the benefit of their activity.
- The complete lack of governmental support to silkworm farmers by means of specialized scientific personnel, specialised laboratories and advisory services. This situation exists for the last years and becomes worse due to the economic crisis.
- The economic crisis, besides all other effects, resulted to a diminished economic support to all existing research structures.
- The, years ago, started being developed cocoon reeling plant in northern Greece was never completed, leaving behind the same difficulties to the Greek silkworm farmers.



Perhaps for the Greek reality, one of the most important factors, which interrupted the initial sericulture's development, were the changes in the Agriculture's Ministry policy, in relation to the silkworm egg provision.

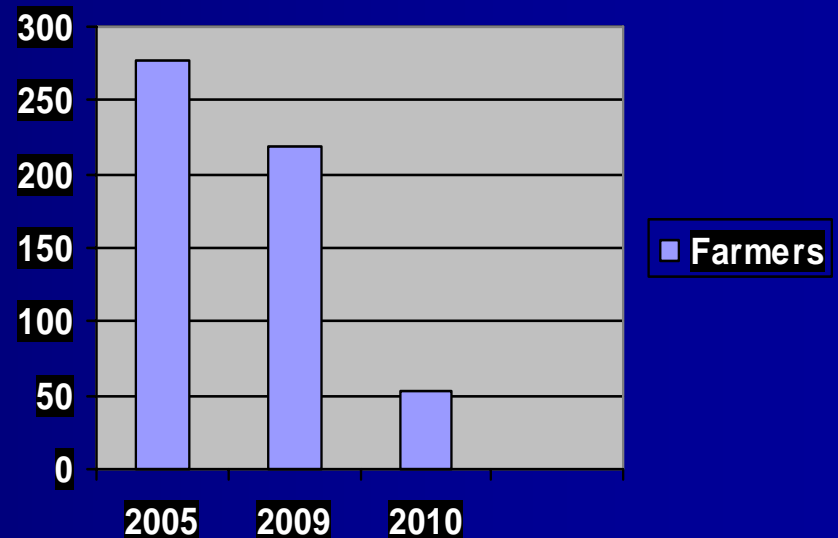
- Up to year 2009 the Ministry of Agriculture was holding centrally the provision of the silkworm eggs to the involved in sericulture farmers, purchasing the necessary amount through an international tender and distributing them, under a very low – almost symbolic price, to the farmers.
- It has to be emphasized in this point that there does not exist local silkworm egg production in Greece and the whole country needs are covered by imports.



In 2009 it was announced that the farmers had to cover their silkworm egg need by themselves, covering all the costs.

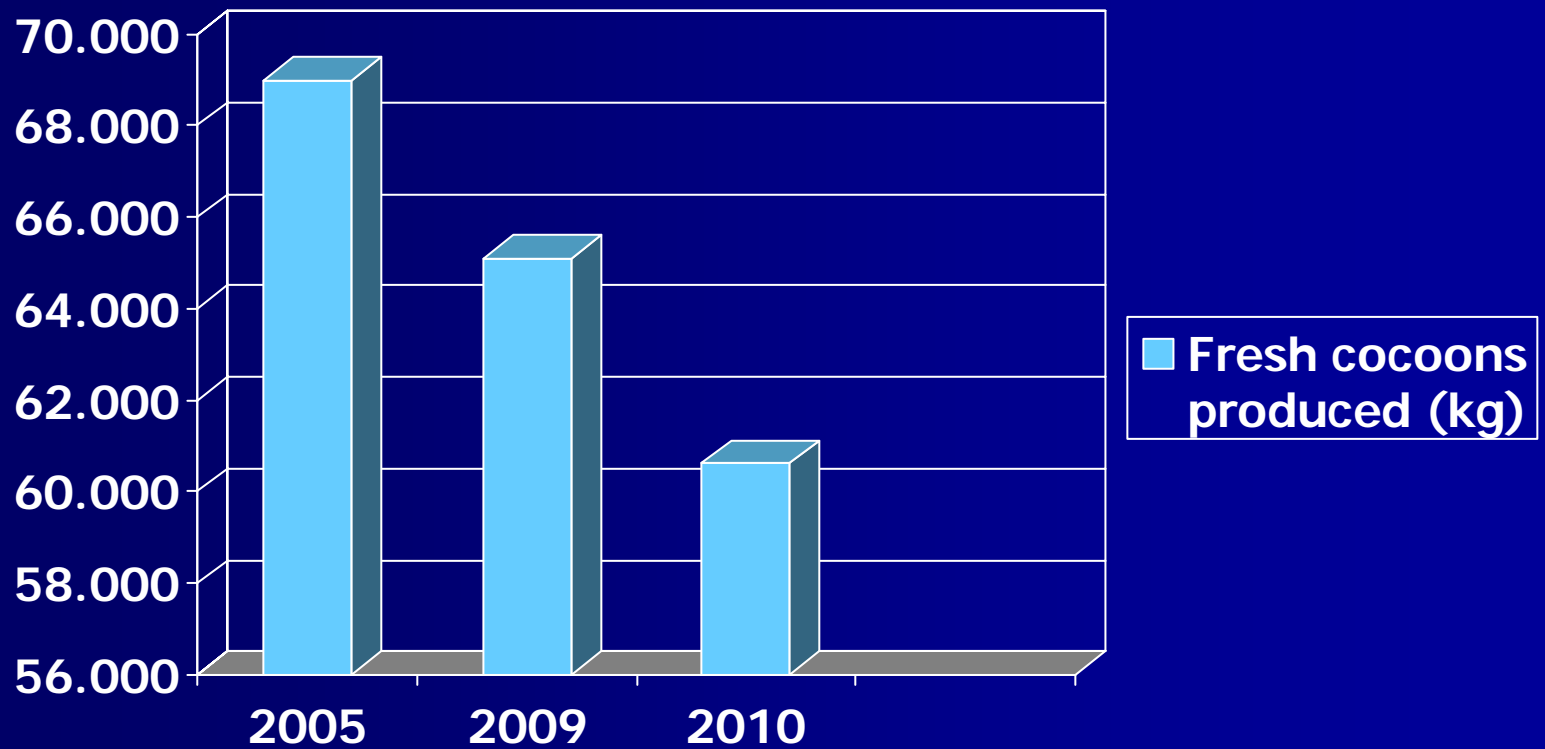
- This decision damaged seriously the already weak Greek sericulture, disappearing completely the small scale silkworm farmers.

- Silkworm farmer numbers between reference year 2005 and year 2009-2010

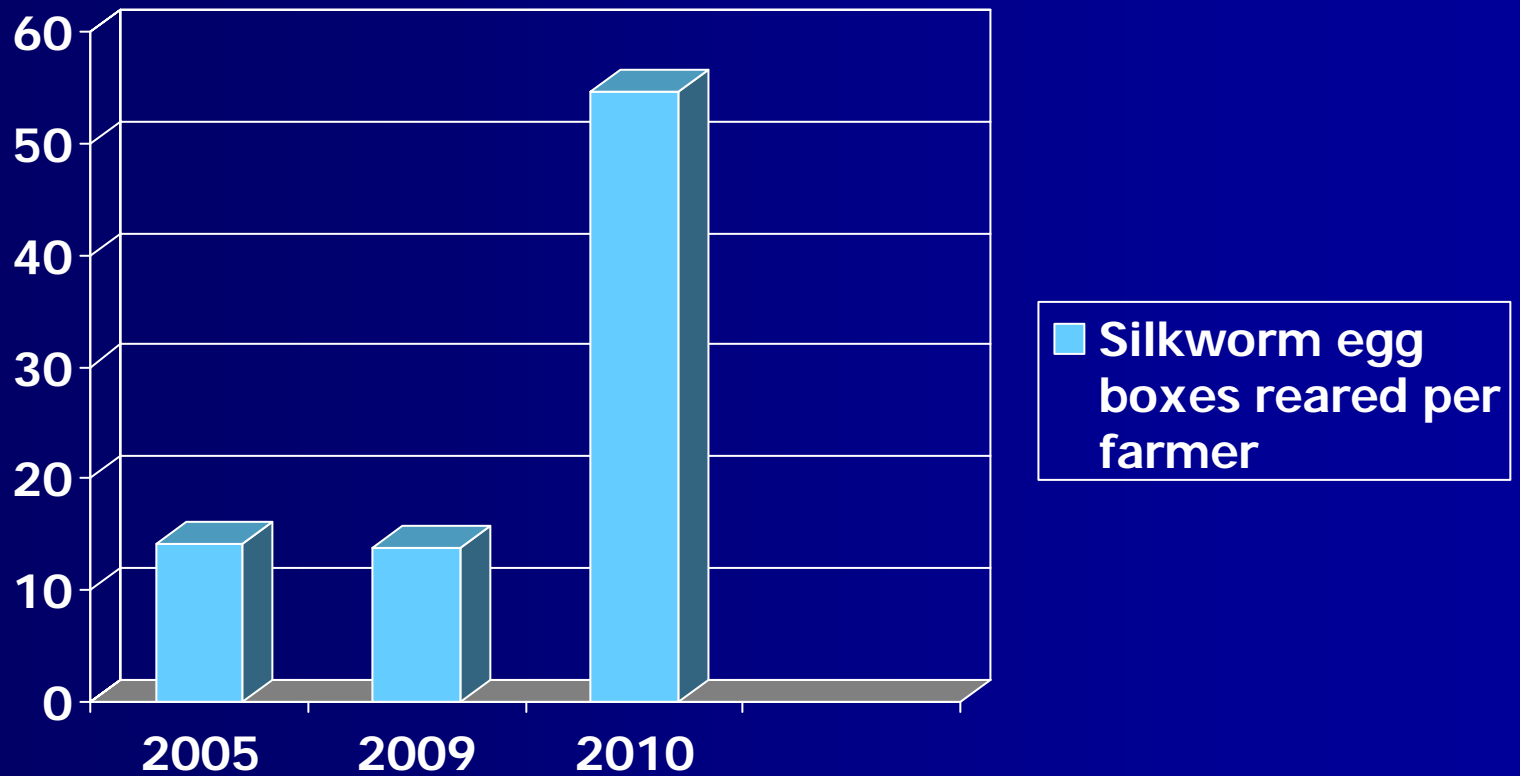


| Area of the country | Number of farmers involved in sericulture | | Total Number of silkworm egg boxes reared | | Mean Number of silkworm egg boxes reared per farmer | | Total amount of fresh cocoons produced (kgs) | | Mean amount of fresh cocoons produced per box of eggs (kgs) | |
|--------------------------|---|-----------|---|--------------|---|--------------|--|---------------|---|--------------|
| | Year 2009 | Year 2010 | Year 2009 | Year 2010 | Year 2009 | Year 2010 | Year 2009 | Year 2010 | Year 2009 | Year 2010 |
| Creta island (Chania) | 34 | 0 | 54 | 0 | 1.58 | 0 | 1.108 | 0 | 20.51 | 0 |
| North Greece (Orestiada) | 8 | 10 | 549 | 527 | 68.62 | 52.7 | 10.980 | 13.200 | 20.0 | 25.04 |
| North Greece (Evros) | 33 | 28 | 902 | 897 | 27.33 | 32.03 | 18.550 | 18.000 | 20.56 | 20.06 |
| North Greece (Kavala) | 3 | 3 | 300 | 345 | 100.0 | 115.09 | 6.000 | 6.600 | 20.0 | 19.13 |
| North Greece (Serres) | 13 | 12 | 929 | 1130 | 71.46 | 94.16 | 23.089 | 22.828 | 24.85 | 20.20 |
| Central Greece (Evia) | 1 | 0 | 20 | 0 | 20.0 | 0 | 415 | 0 | 20.75 | 0 |
| Greek islands (Lesvos) | 126 | 0 | 248 | 0 | 2.96 | 0 | 4.960 | 0 | 20.0 | 0 |
| Totals | 218 | 53 | 3.002 | 2.899 | 13.77 | 54.69 | 65.102 | 60.628 | 21.68 | 20.91 |

Total amount of fresh cocoons produced between reference year 2005 and year 2009-2010



Silkworm egg boxes reared per farmer between reference year 2005 and year 2009-2010



So in relation to the reference year 2005 the evolution of the Greek sericulture for the last years is described below.

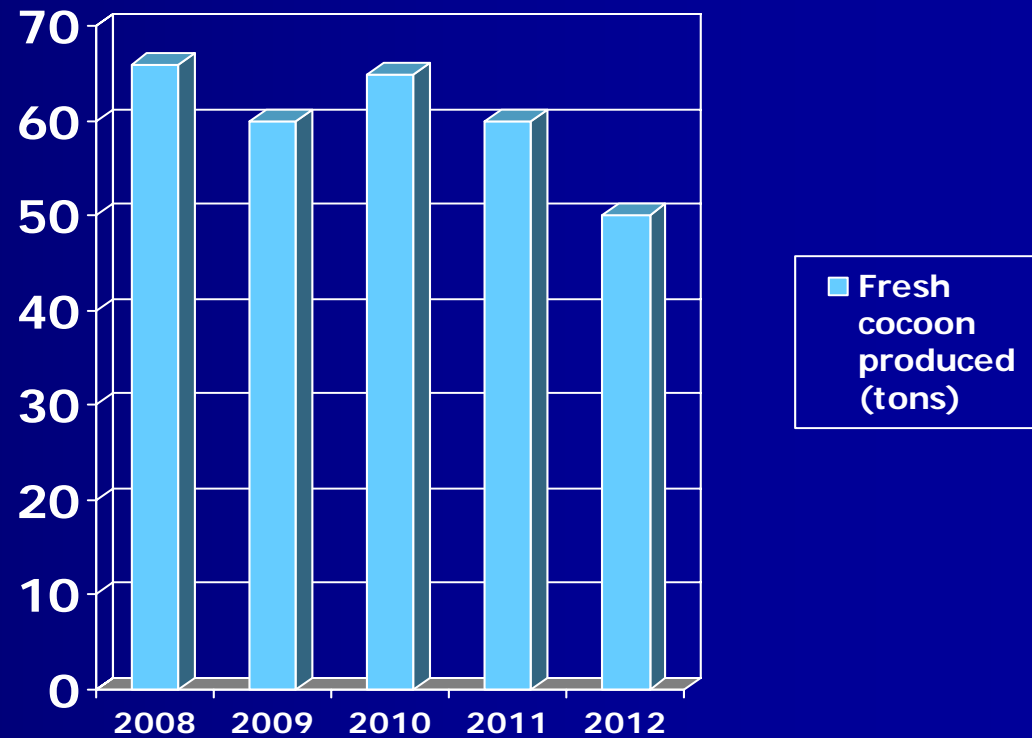
| Year | Silkworm egg boxes reared | Cocoon farmers involved | Boxes reared per farmer | Total fresh cocoon produced (tons) | Mean cocoon prod/n per box (kg) |
|-------------|----------------------------------|--------------------------------|--------------------------------|---|--|
| 2005 | 3.920 | 277 | 14,15 | 69 | 17,60 |
| 2008 | 3.742 | 245 | 15,27 | 66 | 17,63 |
| 2009 | 2.988 | 200 | 14,94 | 60 | 20,03 |
| 2010 | 3.002 | 218 | 13,77 | 65 | 21,66 |
| 2011 | 2.899 | 53 | 54,68 | 60 | 20,69 |
| 2012 | 2.732 | 50 | 54,64 | 50 | 18,30 |

Source: In the ISC web site does not appear data for the Greek fresh cocoon production in the period 2008-2012, the last existing report being that of year 2007, giving a production of 104 tons. The data presented here are drawn from the Greek division of EU subsidies control (OPEKEPE).

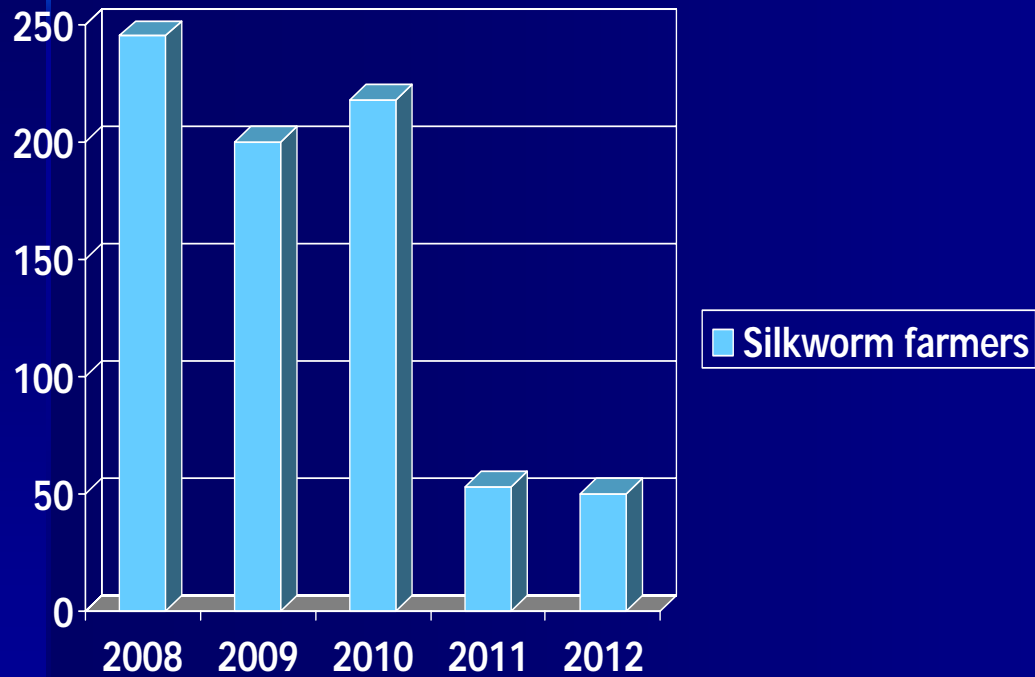
Given as charts the data of the previous table are given in the following slides



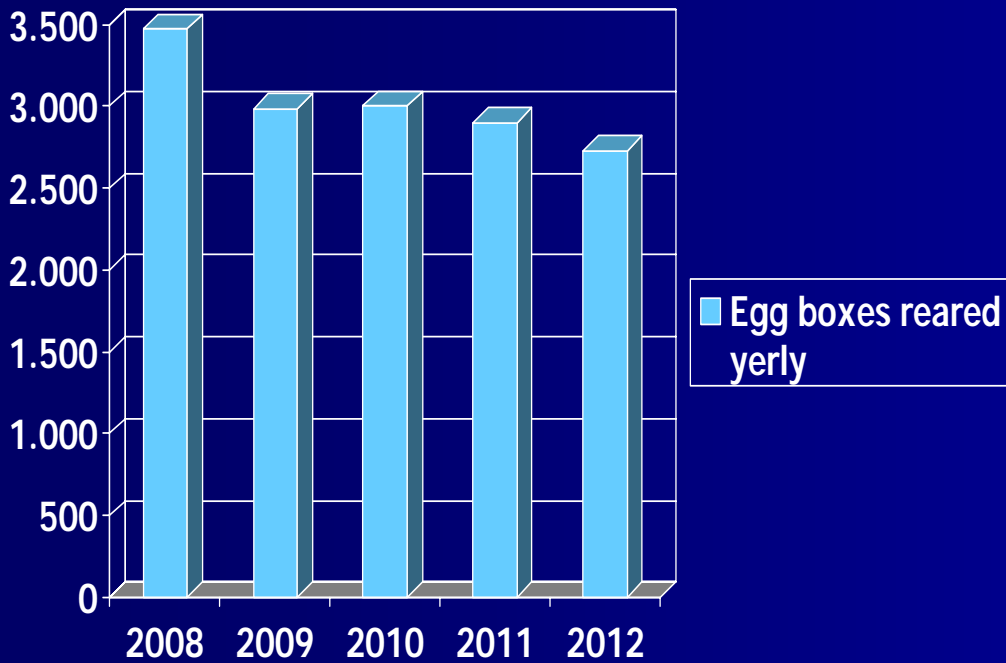
Evolution of fresh cocoon production for the period 2008-2012



Number of silkworm farmers for the period 2008 – 2012



Number of silkworm egg boxes reared yearly for the period 2008 – 2012



Of course the previous figures of the Greek raw cocoon appear very low, but they could be considered as significant, compared to the data of rest European countries, involved in Sericulture.

Raw cocoon production of European countries (tons)

| Country | Year | | | | |
|----------|------|------|------|------|------|
| | 2007 | 2008 | 2009 | 2010 | 2011 |
| Bulgaria | 55 | 48 | 51 | 75 | 49 |
| Greece | 69 | 66 | 60 | 65 | 60 |
| France | 0 | 0 | 0 | 0 | 0 |
| Italy | 6 | 0 | 0 | 0 | 0 |
| Romania | 4 | 5 | 25 | 0 | 0 |
| Turkey | 130 | 126 | 140 | 129 | 151 |

Source: ISC statistical data (except for Greece who's data are drawn from the Greek division of EU subsidies control - OPEKEPE)

Apart of the sericultural activities concerning primary production (fresh cocoons), further activities around sericulture and silk processing appear as follows:

- Due to the lack of cocoon reeling facilities in Greece, there does not exist any local raw silk production. As mentioned an initiated reeling plant in Northern Greece, was never completed and its expected contribution to all Greek sericulture was never realized.
- The only existing raw silk production is practiced by some small scale silk enterprises in Soufli, a small town in northern Greece. These are reeling, deguming, spinning, dyeing and waving small quantities, absolutely directed to a part of their needs, for local silk products. In total there are processed around 5 tons of raw cocoons yearly.
- In general, the any existing silk product industry in Greece, covers its needs by imports of silk yarn, silk garments, silk fabrics and ready made silk clothing. These are mainly intra E.U. imports and less from other than E.U. directions.

The above described situation in Greece in general reflects to the whole E.U. situation, which is absolutely based upon imports, some countries having the role of the main importers and distributors within E.U.

| Silk imports-exports by E.U. countries | | | | | | |
|--|-------------------------|-----------------------|---------------------------|-------------------------|-----------------------|---------------------------|
| Country | Year 2011 | | | | | |
| | Dry cocoon Exports tons | Raw silk Exports tons | Twisted silk exports tons | Dry cocoon Imports tons | Raw silk Imports tons | Twisted silk Imports tons |
| Bulgaria | --- | --- | 17 | --- | 9 | --- |
| France | --- | --- | --- | --- | 108 | --- |
| Italy | --- | 357 | 393 | --- | 699 | 1764 |
| Switzerland | --- | --- | 2 | --- | 5 | 3 |
| Turkey | 68 | 19 | 8 | --- | 93 | 86 |

Source: ISC statistical data

The whole today's structure of the silk industry in E.U. has to be considered in relation to the general textile and clothing sector, which faces a strong crisis in the last years.

- The sector in 1998 amounted a turnover of 198 bn euros, and accounted 2,3 million workers employed in 150.000 small and medium scale enterprises.
- Up to 2009 due to the economic crisis, the sector's turnover dropped to 167 bn. Euros, decreasing by 28%, and the people employed by it almost halved.
- Today the bigger producers in this field are Italy, Germany, France, Spain and U.K., sharing almost 75% of the total E.U. activity.
- In some other countries, like Portugal, Greece, Lithuania, Poland, Slovakia, Romania, Bulgaria and Czech Republic, the sector has been playing an important role in the economy, accounting in the past 5-15% of the employment and around 10% of total exports of manufactured products.
- Since 2009 the sector's tendency generally in E.U. is a slow recovering, but in some countries, including Greece, it is still very severely affected, having lost the biggest part of its enterprises, the most of the closed or transferred to other countries.

Existing situation in the country by means of sericultural institutes, government offices in charge of cocoon and silk production, research and extension systems.

- **As an important fact in this description has to be pointed that the ongoing economic crisis resulted to the diminished financing of all existing advisory and research structures of the country.**
- **The already, for long time existing, lack of governmental support to silkworm farmers, by means of specialized scientific personnel, specialised laboratories and advisory services, became even worse and today there is not absolutely existing any structure able to support and promote sericulture.**
- **The research activities of the any existing institutions have dramatically declined, their specialised personnel is directed to unemployment and is never replaced and there is obvious the risk of complete inactivity or even complete disappearance of them.**

More specifically

- The only existing specialised in sericulture institution, the Komotini Agricultural research Station, has been already left without researchers and remains to a diminished financing, unable to maintain even its routine activities, as the maintenance of its silkworm gene bank.
- The peripheral divisions of the Ministry of Agriculture undergo the same situation. Their support to sericulture was already of no significance, dealing only with administration routines around the E.U. subsidies. Finally even this activity was transferred to the general administration and subsidies control service (OPEKEPE), and there after there isn't left any significant ministry's activity, directly connected to advise, aid and promotion of sericulture.
- The still existing "Sericultural Laboratory of Athens", a branch of the Ministry of Agriculture hosted by the Agricultural University of Athens, according to the existing law since 1910, only deals centrally with the quality control of all the imported silkworm eggs in all areas of Greece, creating a complicated interfering, long time consuming and causing numerous problems to the farmers.

As it comes out of all the above facts, today there aren't actually any significant and sufficient governmental structures in the country, targeting to a strategy for the development of sericulture.

- **The existing farmers actually remain without specialised scientific and technical support, relying absolutely upon their experience and the aid of the very-very few existing specialised scientists.**
- **In addition the possibilities for their organization to strong and active cooperatives are minimal, removing in this way even the chances for an internal by their organization support.**

Concerning any thoughts about the future of sericulture in the country, it seems very difficult to go through any predictions. It could though be an attempt to this direction taking in consideration the next facts:

- The international prices of cotton, which is the main crop in Greece, steadily fall the last years, something which combined with the increasing cost of inputs to this crop, affects negatively its future.
- Tobacco, another important crop of the country, faces grate problems, either as crop or as processing industry. Its prices continuously fall and its high labor demand makes it very unattractive for the farmers.
- E.U. subsidies for the main country's crops will most possibly dramatically decrease after year 2014, according to the new C.A.P., reflecting negatively to their income.
- Tourism seems to gain bigger shares and bigger importance in the national economy, predicting the development and increase of small handcrafts industries.
- The increasing rates of unemployment, due to the economic crisis, direct many people, especially young, to seek various activities for the creation of some income.
- Cocoon production in traditionally leading countries, like China, Korea and India, are steadily falling due to the rapid industrialization of them, the result being the incomplete coverage of their industry's demands for raw silk materials.
- This situation directly reflects to other silk processing countries, especially those dealing with carpet waving, where appears also an increasing demand for raw silk materials.

Considering all the above facts in combination, it comes out that there could be presumed an opportunity for sericulture's implication in solving some of the existing problems, by means of efficient land and labor use, income sufficiency, rural development and export possibilities.

Of course this opportunity should be urgently and sufficiently covered by some central governmental actions targeting to:

- Efficient coverage of the cocoon farmers with training
- Technical support
- Disease control
- Promotion and use of existing national silkworm and mulberry resources
- Cooperative organization for cocoon trade, cocoon reeling, and silk processing

It becomes obvious that all the above described facts have to be faced through a long term, carefully planned national programme, within a general E.U. frame.

- Under the today formed situation though, and the appeared economic crisis, it seems to be more than optimistic to expect such actions and hope sericulture to grow soon in Greece
- It is certain though, that there are specific favourable conditions promising a potential for sericulture's development in the country.
- For sure the next few years will form new frames on the economic reality of Greece and other European countries as well, which will for sure affect the future of sericulture.



It is desirable of course to study in advance the formed situation and predict future actions, but this seems today extremely difficult, especially concerning the future of sericulture. There are arising questions very difficult to be answered, like:

- What will be the economic situation for the next years?**
- Which will be the changes in the E.U. Common Agricultural Policy?**
- Which will be the priorities on national and international level?**
- Which will be the energy cost development for the next years?**
- Which will be the share of luxury silk products in a world under economic crisis?**

Taking such questions in consideration it is really difficult to speak about national or even European strategies for the sericulture's development.

- The next few years are going to be very critical, and the only certain thing is that there are going to be realized many big changes in the agricultural, processing and trade reality of many countries.
- The direction and the magnitude of these changes will create the future of sericulture in tomorrow's Europe.

So let us hope for the best !!!!!



**Thank you very much for
your attention.**